# EXHIBIT 8

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE
---
CHAPTER 11

IN RE:
W.R. GRACE & CO., et al.
Debtors.

Case No. 01-1139 (JFK)
Jointly Administered
---
DEPOSITION OF
Arthur L. Frank, M.D., Ph.D.
June 5, 2009
Philadelphia, Pennsylvania
Lead: Nathan Finch, Esquire
Firm: Caplin & Drysdale

FINAL COPY
JANE ROSE REPORTING 1-800-825-3341

APPEARANCES:

McGARVEY, HEBERLING, SULLIVAN
& McGARVEY, LLP
BY: JON HEBERLING, ESQUIRE
745 South Main
Kalispell, Montana 59901
Phone: (406) 752-5566
Representing the Plaintiffs

CAPLIN & DRYSDALE
BY: NATHAN D. FINCH, ESQUIRE
BY: BERNARD S. BAILOR, ESQUIRE
One Thomas Circle, NW, Suite 1100
Washington D.C. 20005
Phone: (202) 862-5000
Ndf@capdale.com
Bsb@capdale.com
Representing the Defendants



APPEARANCES:

KIRKLAND & ELLIS, LLP
BY: DAVID BERNICK, ESQUIRE
BY: BRIAN STANSBURY, ESQUIRE
BY: HEATHER A. BLOOM, ESQUIRE
655 Fifteenth Street, NW
Washington DC 20005
Phone: (202) 879-5108
Dbernick@kirkland.com
Bstansbury@kirkland.com
Hbloom@kirkland.com
Representing the Defendants

ECKERT, SEAMANS, CHERIN & MELLON
BY: EDWARD J. LONGOSZ, II, ESQUIRE
1747 Pennsylvania Avenue, NW, 12th Floor
Washington DC 20006
Phone: (202) 659-6619
Elongosz@eckertseamans.com
Representing Maryland Casualty & Zurich



APPEARANCES VIA TELEPHONE:

CHRISTENSE, MOORE, COCKRELL,
CUMMINGS & AXELBERG
BY: DALE COCKRELL, ESQUIRE
145 Commons Loop #200
Kalispell, Montana 59901
Phone: (406) 751-6000
Dcockrell@cmccalaw.com
Representing the Defendants

BY: DORI ANNE KUCHINSKY, ESQUIRE
SENIOR LITIGATION COUNSEL
W.R. GRACE
44084 Riverside Parkway, Suite 300
Leesburg, Virginia 20176
Phone: (703) 729-8543
Dori.kuchinsky@grace.com



APPEARANCES VIA TELEPHONE:

BY: ALAN B. RICH, ESQUIRE
1401 Elm Street, Suite 4620
Dallas, Texas 75202
Phone: (214) 744-5100
Arich@alanrichlaw.com
Representing the Plaintiffs

JANE ROSE REPORTING
80 Fifth Avenue
New York, New York 10011
Phone: 800-825-3341
Lorraine Murtaugh, Court Reporter

I N D E X



E X H I B I T S





E X H I B I T S I N D E X





ARTHUR L. FRANK, M.D., PH.D.

ARTHUR L. FRANK, M.D., PH.D.,
after having been first duly sworn, was examined and testified as follows:

- - -

EXAMINATION

- - -

BY MR. FINCH:

**Q Dr. Frank, my name is Nathan Finch. I represent something called the Official Committee of Asbestos Personal Injury Claimants in the W.R. Grace Bankruptcy Case. You've had your deposition taken many times before?**

A. I have.

**Q If you don't understand something I ask you, can you tell me and I will rephrase the question?**

A. I'll try not to be shy.

**Q Do you have any understanding of what the Official Committee of Asbestos Personal Injury Claimants is?**

A. Only some vague sense of it.

**Q What is your vague sense of it?**

A. That there's bankruptcy proceedings with Grace and the Asbestos Claimant's Committee is there to discuss funds that are to be utilized for



ARTHUR L. FRANK, M.D., PH.D.

paying off claims and to discuss how and in what manner that should be done and sort of to discuss what various cases might be worth.

**Q Have you ever served as an expert in any other asbestos bankruptcy?**

A. I have. I have been involved with the Celotex Bankruptcy, with Owens-Corning, or Owens-Illinois, I forget which one, and I recently did some work for Armstrong.

**Q What was the nature of the work that you did in the Armstrong Bankruptcy?**

A. It was simply to write an affidavit to the effect of what the health effects of asbestos were, basically.

**Q And in the Celotex Bankruptcy?**

A. That was actually regarding insurance litigation as part of that bankruptcy, and, again, it was to discuss the hazards of asbestos.

**Q In any of your other prior engagements -- let's make it more broad than that. Have you ever, other than the Grace Bankruptcy, had the occasion to review or form opinions about a trust distribution procedures, bankruptcy trust distribution procedures?**

A. No.
**Q I take it you don't hold yourself out as an expert in what criteria should be used to settle asbestos personal injury cases?**
A. First of all, I don't hold myself out as an expert. That's a designation by the courts.
**Q Okay.**
A. I'm a physician who has some experience wit asbestos and asbestos-related disease, but I have to date not been involved with this kind of adjudication over how settlements might be made.
**Q You would agree with me that you don't have any experience in how asbestos personal injury cases are settled from the perspective of someone who is charged with settling those cases on behalf of an asbestos company or an asbestos trust?**
A. That's not ever been my role in all the work that I've done with regard to asbestos litigation. That's what lawyers and others are there for.
**Q And you certainly don't have any experience or expertise in how much money should be paid to settle various categories of asbestos disease claims?**
A. I have heard over the years what claims are





settled for and know that they vary jurisdiction by jurisdiction, but I don't get involved in those discussions or negotiations.
**Q And so you wouldn't have any opinions or be offering any opinions that particular dollar amounts would be reasonable or unreasonable with respect to the various asbestos-related diseases?**
A. That depends on the question I'm asked. Some of the dollar amounts that are being discussed or that are in some of the documents that I've seen seem quite unreasonable for various reasons.
**Q Well, you have no experience or expertise in how much money Grace paid historically to resolve asbestos personal injury claims; do you?**
A. No.
**Q And so you couldn't give --**
A. Other than what they have paid in cases in Libby. I have some knowledge of that.
**Q But you don't have any knowledge about what they paid in cases outside of Libby; correct?**
A. No.
**Q You have no knowledge of the characteristics of the cases outside of Libby and what the**





**decisions were made to settle those cases were as compared to Libby?**
A. No.
**Q You have no knowledge or opinions about whether or not the factors that go into the decision whether or not to settle an asbestos personal injury claim are reasonable or not reasonable; do you?**
A. I have no knowledge since I've not been involved. I probably have some opinions, but I can't have opinions based on no facts.

- - -

(Exhibits Frank-1 through Frank-7 were marked for identification and are attached hereto.)

- - -

BY MR. FINCH:
**Q I'm going to put what has been marked as Frank Deposition Exhibits One, Two, Three, Four, Five, Six and Seven in front of you.**
A. Okay.
**Q And I'm going to ask you to briefly identify them for the record?**
A. The first is entitled "Expert Report of Dr.





Arthur Frank", and this would have been a report prepared back in December of 2008, signed the 23rd, December 2008. Number two is one page that says "Supplemental Expert Report".
**Q What's the date of that? It's on the second page.**
A. 12, March, 2009. The third one is listed as Sur-Rebuttal and Supplemental Expert Report" dated 14, May, 2009. The next is "Response of Dr. Frank and Dr. Whitehouse to the Report of the ACC's Dr. L. Welch March 2009", that's dated 14, May 2009. The next is "Response of Dr. Frank and Dr. Whitehouse to the Report of the ACC's Dr. G. Stockman, 4/6/09", and that would also be dated 14, May. And the last is --
**Q Wait a minute. Five was Freedman --**
A. I'm sorry; I missed Freedman. "Response of Dr. Frank and Dr. Whitehouse to the ACC's Dr. G. Freedman", I imagine that's also dated.
**Q Dated May 2009?**
A. 14, May, 2009, that's Five. And Six is Stockman and Seven is the "Sur-Rebuttal and Supplemental Expert Report by Dr. Allen Whitehouse".

**Q Do these reports contain the opinions and conclusions you've been asked to give in connection with the Grace Bankruptcy matter?**
A. Yes.
**Q So, you understand the purpose of an expert report is to provide all the opinions that you've been asked to give so that I can ask you questions about them; correct?**
A. Yes, sir.
**Q You have testified from time to time in asbestos personal injury cases; is that correct?**
A. From time to time, yes.
**Q Is it your opinion, to a reasonable degree of medical certainty, that exposure to chrysotile asbestos from brakes can cause mesothelioma?**
A. Yes.
**Q Do you hold the opinion that pure chrysotile, to the extent that it exists, can cause mesothelioma?**
A. Yes.
**Q Do you hold the opinion that any identifiable asbestos exposure above background to pure chrysotile can cause mesothelioma?**
A. Yes.





**Q Do you hold the opinion that any identifiable exposure to pure chrysotile asbestos above background can be a substantial contributing factor in causing someone's mesothelioma, even if they were exposed to other asbestos fiber types?**
A. Yes.
**Q So, for example, in your view, working for a few days around a pure chrysotile containing product, to the extent such a thing exists, breathing the fibers omitted by that would contribute to causing someone's mesothelioma, even if they spent ten years working in a shipyard around amphibole-containing products?**
A. Yes.
**Q And that's your opinion to a reasonable degree of medical certainty?**
A. It is.
**Q You have testified in the past, and I'll show you this if you want to see it, that in your experience and knowledge most cohorts of individuals who were exposed to asbestos are exposed to mixed fiber types?**
A. I probably testified to that. A better way to describe it I think would be that there are any





number of cohorts of single fiber types with regard to amphiboles, it is rare and unusual to have a chrysotile only cohort.
**Q So, there are very view chrysotile only cohorts; would you agree with that?**
A. Correct.
**Q Les Stainer, the cohort he started in South Carolina is one of the handful of pure chrysotile exposure?**
A. Yes, or chrysotile miners in Canada or China or elsewhere.
**Q Do you have any opinions about whether some of the chrysotile that came from Canada also contains tremolite?**
A. That's an interesting question. It's widely discussed in the literature as containing tremolite. I have a paper that discusses that. It's a 1988 paper that I did with Dr. Dodson. We looked at UICC B referenced chrysotile in looking at more than 20,000 fibers, found no evidence of any tremolite in there, and even though you'll find plenty of statements in the literature that says there's tremolite, you will find a great paucity of data as to how much and people make a





bold statement but don't have a reference and don't have any data as to how much is actually there.
**Q But you wouldn't conclude that there is no possibility of tremolite being in Canadian chrysotile?**
A. No, I would not.
**Q Have you ever read William Longo's report in this case?**
A. Not that I recall.
**Q Do you know who Bill Longo is?**
A. I know Bill.
**Q So, if Dr. Longo testifies that Grace commercial construction products contain both tremolite and Libby amphibole, you wouldn't be in a position to dispute that?**
A. No. It's the kind of studies he does and it's not the kind of studies I do.
**Q And have you ever worked with Dr. Longo or relied on his opinions in any context?**
A. He and I have certainly been involved in some litigation matters on the same case, but I have not really worked with him on anything. I've seen reports, on a small number of occasions, that

I've probably relied upon.

**Q One of the cohorts that's been studied extensively in asbestos medical literature is the insulator cohorts that were studied by Dr. Selikoff and other people, including you, at Mount Sinai; correct?**

A. Yes.

**Q Can we call that Selikoff insulator cohort?**

A. Fine.

**Q Would you agree with me that that cohort of asbestos insulation workers was exposed to both chrysotile asbestos and amphibole asbestos?**

A. Yes.

**Q How would you describe that study, that series of studies; would you describe that as a cohort study?**

A. It is a retrospective/prospective cohort study with entry into the study requiring twenty years of work at the time of entry and then followed over the individual's lifetime.

**Q I had asked you some questions about chrysotile causing mesothelioma. Do you believe that pure chrysotile, to a reasonable degree of medical certainty, can also cause lung cancer?**





A. Yes.

**Q And would you agree that any identifiable exposure to asbestos, above background which is a chrysotile exposure, can contribute to causing lung cancer?**

A. Yes.

**Q Would you agree with me that any identifiable exposure to asbestos above background that's chrysotile asbestos can contribute to causing non-malignant asbestos diseases?**

A. Yes.

**Q In your December report, which is Frank Deposition Exhibit Number One --**

A. Yes.

**Q -- on page ten --**

A. Yes, sir.

**Q -- at the bottom, you're talking about -- before we get to the bottom. For definitional purposes, if I used the term "Libby asbestos" or "Grace asbestos" to describe the tremolite/winchite/richterite mix of amphiboles that is found in the vermiculite or mined in Libby, Montana, would understand that's what I'm talking about?**





A. Yes. I use it because there is other Grace asbestos that would be found in other settings that would not be the same materials.

**Q Well --**

A. But if that's the definition you want me to work with, I'll work with it.

**Q Let's call Libby asbestos, means the richterite/tremolite/winchite mix that is found in vermiculite or mined in Libby, Montana?**

A. All right.

**Q And that is a subset of all Grace asbestos, you understand that there are commercial construction products that have asbestos from Canada in them that Grace sold?**

A. Yes, that's why I made the comment. They did.

**Q So, do you have any understanding as to whether those commercial construction products, like Monokote, would also have Libby asbestos in them as a result of vermiculite being used as a filler in those products?**

A. I do not know. It may have been. I have no specific knowledge of that.

**Q You wouldn't dispute Dr. Longo, or anybody**





**else that testified, that the majority of Grace's commercial construction products contained Libby asbestos as a --**

A. I have no basis to dispute it.

**Q On the bottom of page ten in your December 2008 report, you write "It is a majority view that amphiboles are more toxic than serpentine asbestos." And serpentine asbestos would include chrysotile; correct?**

A. It is the only serpentine asbestos.

**Q Chrysotile is serpentine asbestos?**

A. Right. It doesn't include it. It is the whole class.

**Q And then you say, "My own views at the issue is not settled as there is evidence going both ways."**

A. Yes.

**Q Is that still your view?**

A. Yes.

**Q You have testified, I believe, that most people don't claim that there is a different potency factor as between amphiboles and chrysotile for lung cancer. Is that your opinion?**

A. There's a much smaller body of evidence

where there is such a claim made. Most of the discussion has to do with mesothelioma, but there are some people who also feel there is a differential with lung cancer that's been less well studied, I think.

**Q And what about as a differential between amphibole and chrysotile for purposes of causing nonmalignant disease? Is there any literature on either side of that question that would allow you to make a categorical statement that amphibole asbestos exposures are more likely to cause asbestos disease than chrysotile asbestos exposures?**

A. No.

**Q You came into the deposition, and I took it because it was sitting there in front of you, I think you had an extra copy, you have the most recent copy of your CV?**

A. Yes.

**Q Can we mark that as Frank Deposition Exhibit Number Eight?**

A. Certainly.

- - -

(Exhibit Frank-8 was marked for





identification and is attached hereto.)

- - -

BY MR. FINCH:

**Q Are you generally familiar with the EPA 1986 Airborne Asbestos Health Assessment Update?**

A. Not especially. I probably saw it at the time. I haven't seen it in years and have no specific recollection of it.

**Q One of the principal authors is a gentleman by the name of Dr. William Nicholson. Do you know --**

A. I know Bill very well.

**Q Do you have a view as to his qualifications and expertise on asbestos-related medical issues?**

A. He was trained as a biophysicist and spent a lot of his time working with Dr. Selikoff learning about asbestos, doing asbestos-related research.

**Q Do you have an understanding that it is still the official position of the United States Government that all different types of asbestos fiber, and by "all types", I mean amosite versus chrysotile, are equally --**

A. Amphiboles.

**Q Excuse me. Amphiboles versus chrysotile are**





**equally potent for causing mesothelioma?**

A. Yes. They have not adopted any other view, even though that has been put forward.

**Q And some of the places that it has been put forward, are you familiar with the EPA working group study in 2002 colloquially known as Berman and Crump, where the authors of that surveyed the epidemiological literature and attempted to quantify how much more toxic the amphiboles were than chrysotile fibers for the production of mesothelioma?**

A. I am.

**Q And what did the EPA do, if anything, with the Berman and Crump work?**

A. Had it reviewed by a scientific body who found it weak and unsubstantiated.

**Q And just to break that down a little bit more, the Berman and Crump 2003 paper working group study was updated substantially in 2007 and 2008 and became something known as Bratt and Crump; correct?**

A. I'm specifically aware of that.

**Q But it was their work which attempted to quantify the difference between the amphiboles and**





**causing mesothelioma and chrysotile and causing mesothelioma led to a hearing before a science advisory board at the EPA last summer, 2008; correct?**

A. Yes.

**Q And did you participate in any way in, and by "participate any way", did you review the EPA science advisory board's conclusions about the adequacy of the data to support the Bratt and Crump/Berman and Crump work?**

A. I believe I read something about that. It may have been a summary.

**Q Let's mark this as Frank Deposition Nine.**

**- - -**

**(Exhibit Frank-9 was marked for identification and is attached hereto.)**

**- - -**

**BY MR. FINCH:**

**Q Frank-9, can you identify Frank-9, Dr. Frank?**

A. It is a November 14, 2008 letter to the administrator of the EPA, Mr. Johnson, with an attachment, which is a report that the committee put together.

Page 26

ARTHUR L. FRANK, M.D., PH.D.

**Q And this is the report that the science advisory board put together when they -- let's back up. The science advisory board was a collection of experts in lots of different disciplines with the question of being asked of them whether or not the Berman and Crump/Bratt and Crump work was sufficiently valid to make quantitative assessments about the differences between asbestos fiber type and asbestos fiber length in causing mesothelioma and lung cancer; is that correct?**

A. That was my understanding.

**Q And you've seen this document, Frank-9, or a summary of it before?**

A. I think I've seen a summary. I don't think I've seen the whole document as it is presented to me here.

**Q And the committee, the science advisory board committee, generally agreed that the scientific basis as laid out in the technical document referring to Bratt and Crump, in support of the proposed method is weak and inadequate. Did you see that, it's on page two of this document?**

Page 27

**ARTHUR L. FRANK, M.D., PH.D.**

A. Yes.

**Q And so is it your view that it is scientifically not possible to quantify how much more toxic amphiboles can be than chrysotile, at least at this time, with the data we have?**

A. That reflects my own view that I think is unsettled. I think it is a doable piece of work, but it is not doable given the data that we have so far.

**Q Given the data, and by "data", we mean the epidemiological and exposure data about all different types of exposure to asbestos that have been assembled in the scientific community to date, you would say it's impossible to say that amphiboles are X-times more likely to cause mesothelioma than chrysotile?**

A. Well, it's obviously not impossible since people have done that, so it is possible to say that. I don't think the basis for saying it is very good.

**Q You don't think there's a good scientific basis for saying that?**

A. Correct.

**Q If Dr. Whitehouse were to testify that in**

Page 28

**ARTHUR L. FRANK, M.D., PH.D.**

**his opinion amphibole exposures are a hundred times more likely to result in mesothelioma than chrysotile only exposures, you would say there is not a good scientific basis to say that?**

A. Well, he can look at the science the way he wants and there is data that would be supportive of that view. Maybe he decides that he accepts that data. I've looked at that issue and am not persuaded. But different scientists will use different ways of looking at the same information.

**Q Okay. So, you would disagree with Dr. Whitehouse, if Dr. Whitehouse's opinion is that amphibole fiber are a hundred times more likely, a hundred times more potent for chrysotile for causing mesothelioma, you would disagree --**

A. I personally would disagree with that, but other scientists would certainly agree with him. And some would say that crocidolite is 500 times more potent. That's what Berman and Crump says or Hodgson and Darden.

**Q But just because medical experts disagree about something doesn't mean that one of them is unreasonable and the other one is reasonable?**

A. No, it does not necessarily mean that.

Page 29

ARTHUR L. FRANK, M.D., PH.D.

**Q Do you know Dr. Laura Welch?**

A. I do.

**Q You have coauthored papers with her; is that correct?**

A. I have.

**Q One of the papers that you coauthored with her was a paper published in 2007, thereabouts, about the ability of chrysotile to cause mesothelioma?**

A. Yes, sir. And more recently the response to a letter to the editor of that journal, and I know Laura from other settings. When she did sheet metal work many years ago I was involved with that and we both serve on a research group that looks at DOE workers.

**Q Have you come to form a view about her opinions about medical issues, asbestos medical issues?**

A. I have.

**Q Do you believe her opinions are outside of the medical main stream?**

A. There are some of her reviews that I agree with, enough to sign onto an article that she was the chief author. On the other hand, there are

other views that she holds that I disagree with, and I've had those discussions with her from time to time.

**Q Do you view her positions on asbestos-related nonmalignant disease issues as expressed in the reports she has done in the Grace case as completely scientifically unsupportive?**

A. That's a very general question. I think there would be some aspects that I would agree with and some that I disagree. For example, probably the major disagreement as to do with what you call pleural disease, and we actually had this discussion some months back in Washington in another setting in another context. She does not like the term "pleural asbestosis", where others of us feel that that's a perfectly appropriate view. But I think that's more a semantic issue than it is really a major scientific issue.

**Q You certainly wouldn't characterize Dr. Welch's view on asbestos-related medical issues as extremely pro-defendant or not in -- I'll stop there. Extremely pro-asbestos defendant?**

MR. HEBERLING: Objection; overbroad, compound.





THE WITNESS: Well, first of all, I'm aware that Dr. Welch has been involved with litigation. I do not know and have never seen a list of who she has done work for. Most of my dealings have been such that I would say in many aspects we would agree. I would say that with regard to this matter that we're here about today, I take and have some serious disagreements with her construct about some of the materials that are apparently in question.

BY MR. FINCH:

**Q You certainly wouldn't suggest that the views that she has expressed on, for example, whether or not you need blunting of the costophrenic angle to call pleural disease a diffuse pleural thickening that that view is a view that is completely unsupported by any medical literature?**

A. There's medical literature in support of it. There's medical literature that deals with it otherwise. And I take that to be as much as anything else, a semantic issue, not an issue of biology. I mean, what you call something, people call things a lot of different things. There's a





lot of names for a lot of medical conditions. It doesn't mean it is a serious disagreement. It's a different view or different construct. It's like how you classify things.

**Q Are you familiar with something called the CARD Clinic, the Center for Asbestos-Related Disease?**

A. Yes, I am. I have been there on a number of occasions.

**Q Would you generally believe that statements they make on their website would be truthful and accurate?**

A. I've never looked at their website. I would like to think that they are, but I have no basis to comment one way or the other.

**Q The CARD Clinic website says, "Zonolite and Monokote are two trade names under which Libby vermiculite products were marketed.**

**There are two overwhelming examples of the extent to which exposures can spread through commercial products. Vermiculate contaminated with Libby amphibole asbestos was used to create Zonolite attic insulation it is estimated to be in thirty million homes.**





**The second is Monokote, which is a huge fireproofing material. It was used to coat all the steel beams that were used in the construction of the World Trade Center Towers in New York City. You don't have --"**

A. I would agree with everything but that last --

MR. HEBERLING: Just a minute, Nat. I'll object to the Witness being questioned on a document he has not seen and, secondly, it's highly compound. You read quite a bit of it.

BY MR. FINCH:

**Q Do you have an understanding that Libby amphiboles went into Grace's Monokote product?**

A. Yes.

**Q So, anyone who worked around or worked with Monokote products could be exposed to the Libby amphiboles?**

A. Yes.

**Q And anyone who worked around or worked with Grace's Monokote products that contain Libby vermiculite, to the extent they contracted an asbestos-related disease, I take it that your view would be that the exposure to the Libby asbestos**

**in the Monokote could be a substantial contributing factor to causing their disease?**

A. Along with all their other exposures to asbestos, yes.

**Q It's a cumulative exposure that adds to the dose that causes disease?**

A. Yes.

**Q So you couldn't segregate out one exposure as not being responsible and all the rest as being responsible?**

A. Correct.

**Q So, would you agree with me, to the extent that there are characteristics of asbestos disease caused by exposure to Libby asbestos, that may be different from what we have seen in the medical literature, it is the exposure to the Libby asbestos that may cause those differences and not the geographic location which the exposure occurred that matters?**

A. If I understand the question, you're asking me if I believe that Libby asbestos, as earlier defined, regardless of where the exposure takes place, may, in fact, give rise to some different experiences compared to other types of exposure to





other asbestos materials, I would answer yes.

**Q So, there's not like some kind of magical shield around Lincoln County, Montana that if people breathed Libby asbestos in Lincoln County, Montana it would cause one set of asbestos diseases, but if they breathe the same Libby asbestos in an expansion plant in Michigan or as a result of working on a construction site and working with Monokote products, it would cause different asbestos diseases?**

A. The diseases are the same. There's some significant differences. People who might work with construction materials would be working with a variety of materials themselves or be around others working with other materials and would have a wide range of exposures to asbestos.

If one is talking about occupational exposures, we're generally talking about normal workday kind of exposure. But living in Libby is essentially a twenty-four hour, seven day a week exposure, which may be further complicated by working directly with the materials or in some other way, spending part of your time in an occupational setting with exposure. But the





diseases aren't different, but the nature of the exposure is certainly different.

**Q Well, the diseases that people in Libby suffer are no different than the diseases people outside of Libby suffer; is that correct?**

A. It's the same set of asbestos-related diseases.

**Q And the type of asbestos to the extent that it is Libby amphiboles and people are exposed to the vermiculite in Libby as compared to Libby amphiboles that end up in Grace's commercial construction products, the type of asbestos the people are exposed to is the same?**

A. The same asbestos.

**Q So, the only thing that would be different between Libby claimants and people who are suing Grace because they were exposed to Monokote may be the amount of asbestos they were exposed to?**

A. Or the fact that they have other exposures or that the intensity of the exposure is less and they have a different response. But the basic disease would be essentially the same.

**Q Okay.**

A. Or the diseases.





**Q The diseases would be the same between Libby claimants and other Grace claimants; correct?**

A. I mean, we're talking about whatever asbestos-related diseases you can get. The nonmalignant diseases or the various malignancies. So, the diseases are the same.

**Q And the type of asbestos that Libby claimants were exposed to would be the same as the type of asbestos that other Grace exposure, at least to the extent you are talking about the Libby amphiboles and Grace's construction products?**

A. That's a self-answering question. That's a circular question. To the extent you were exposed to something, you are exposed to it. Libby people much less likely would have exposures to other asbestos materials, whereas others would have had --

**Q Exposures to other products?**

A. -- a wider variety of products and a variety of other fibers as well.

**Q But you couldn't say that people who lived in Lincoln County, Montana are the only people exposed to Libby amphiboles?**

A. Certainly not.
**Q So, the thing that might make them different would be the cumulative dose of Libby amphiboles they are exposed to as compared to somebody who lived in California, for example?**
A. That would be one thing that I would expect would be different.
**Q But would you agree with that the a cumulative dose of exposure to Libby amphibole asbestos would depend on the facts and circumstances of each individual person's situation?**
A. Yes.
**Q So, for somebody who is a hod carrier who works very closely with someone spraying Monokote, which contains Libby amphibole, and does that for forty years, that person may have a higher a cumulative dose of exposure to Libby asbestos than someone who has an environmental exposure and lived in Lincoln County for the past twenty years?**
A. You would have to have an assessment of each case, but one could conceive of such a circumstance.
**Q And so, the thing that -- and you haven't**





**done that assessment here, you haven't compared the exposures of the people that live in Libby to the Libby amphibole asbestos as compared to a quantitative basis to the exposures of any of the other hundred thousand other people that are exposed to Grace's Libby asbestos-containing commercial products?**
A. I have not done that in this case, nor have I done that in any case I've been involved with.
**Q And it's probably not even possible to do that; would you agree?**
A. Not accurately.
**Q Let's mark this as the next exhibit.**
**- - -**
**(Exhibit Frank-10 was marked for identification and is attached hereto.)**
**- - -**
**BY MR. FINCH:**
**Q Dr. Frank, do you have Frank-10 in front of you?**
A. I do.
**Q Have you ever seen this document before?**
A. I believe not.
**Q Is this something that Dr. Welch cited in**





**one of her reports. This is an ATSDR analysis of people who lived around expansion plants around the country that would have received unprocessed vermiculite concentrate from Libby. You haven't done any analysis to analyze this ATSDR study, I take it, if you've never seen it before?**
A. Correct.
**Q Let me see if I understand correctly what you have personally done with respect to the Libby patient cohort. And why don't we get some definitions out of the way.**
A. Yes, let's get some definitions. What do you mean by "Libby patient cohort"?
**Q Would you agree with me that there are a group of people who lived in Lincoln County, Montana, or worked in Lincoln County, Montana who may or likely probably were exposed to Libby asbestos?**
A. Yes.
**Q And I have seen in Dr. Whitehouse's report references to some of the papers Libby claimants filed in their brief that the population of people in Lincoln County is around 9,500 people. Is that your understanding?**





A. That's roughly the figure I have. 9,300 I think is what I recall.
**Q So, if we were to call that the Libby asbestos exposed cohort --**
A. Well, except people moved in and out. But basically there are people who lived there and have lived there on a regular basis for a long period of time that would be some subset of that number, but somewhere in that neighborhood.
**Q Well, you could be a subset or it could be bigger; I mean, the 9,500 is how many people lived there, but it could be people who lived there and either they died or they moved away, so it could be bigger?**
A. Right.
**Q So, a rough order of magnitude, there's 9,500 people that were or could have been exposed to Libby asbestos?**
A. At least that number, yes.
**Q At least that number. So why don't we call that the Libby asbestos exposed cohort?**
A. You can call it anything you want. It's not the term I would choose to use for that, but, okay.

**Q Well, what term would you choose?**
A. I would say the residential cohort of Lincoln County.
**Q Okay; the residential cohort of Lincoln County. And that residential cohort of Lincoln County would also include some people who used to work for Grace at the vermiculite processing plant or the mine there?**
A. Correct.
**Q So, there's a residential cohort of Lincoln County that's about 9,500 people; right?**
A. Yes.
**Q And then at some point in the past eight or nine years a Government agency came in and did screenings of some substantial proportion of the residential cohort of Libby County?**
A. About sixty-one percent, as I recall.
**Q And what was the Government agency that did that?**
A. ATSDR.
**Q The ATSDR went in and took x-rays of about 6,800 people, thereabouts?**
A. Something like that.
**Q And what did they find when they did that**





**analysis?**
A. I don't recall the exact number. They found a lot of people with evidence of asbestos-related disease, some of whom have been former workers, some of whom were simply environmentally exposed, some who were family members of workers.
**Q They found some number between a thousand and 2000 people that had evidence of asbestos-related disease on x-ray at least; is that correct?**
A. I don't recall the specific number, but they found some percentage of people. If you tell me it's between one and 2000, I have no basis to disagree with you unless you show me the numbers.
**Q If we say that all those people have an asbestos-related disease, would you agree with that?**
A. I'll take that as an assumption. You just said let's say that they all have asbestos-related disease.
**Q Would you agree or disagree with me that someone who has x-ray changes that show either pleural plaques or pleural fibrosis or diffuse pleural thickening or asbestosis has an**





**asbestos-related disease?**
A. If there is no other known cause in any given individual, yes, that is the mostly likely diagnosis. With a reasonable degree of medical certainty, that would be the correct diagnosis.
**Q All right. Do you have Dr. Whitehouse's May 14th --**
A. Exhibit Seven.
**Q Yes, Exhibit Seven.**
A. I do.
**Q I take it you have reviewed Dr. Whitehouse's May 2009 report as part of your work in this case?**
A. Yes.
**Q And I take it you generally agree with it, although you didn't write it yourself; is that right?**
A. Correct.
**Q In this report, at page thirty-one, the May 2009 Whitehouse report --**
A. Yes.
**Q -- first full paragraph, Dr. Whitehouse writes, "The CARD Clinic has diagnosed over 1,800 patients with asbestos-related disease by either plane chest x-ray or CT scan."**





A. Yes.
**Q "Has confirmed diagnosis on about a hundred patients in other areas of the U.S."**
A. Yes.
**Q So, we would agree with me if I were to call those 1,800 people the Libby patient cohort?**
A. Or the CARD Clinic cohort.
**Q Okay; the CARD Clinic cohort. The CARD Clinic cohort is a subset of the 9,500 person residential cohort of Lincoln County; correct?**
A. Some of the people would be Lincoln County representatives, others would be people who have now lived elsewhere who have come back to the CARD Clinic to be examined or seen, plus the hundred patients from other parts of the United States. So, there would be a large overlap, but it is not --
**Q It's not so extensive that --**
A. No.
**Q You would expect there to be a pretty large overlap between the 1,800 patients of the CARD Clinic and the 9,500 --**
A. Right.
**Q -- residential exposed --**

A. A large overlap, but not a complete overlap.
**Q Of the 1,800 people that are patients of the CARD Clinic, how many of them have you generally examined?**
A. Personally examined by doing a hands-on exam?
**Q Yes.**
A. I've talked to one individual personally.
**Q And how many people's x-rays have you reviewed?**
A. Probably between hundred and 125, something like that.
**Q And how many people's pulmonary function tests have you reviewed of that 1,800 people?**
A. Some subset of that. A relatively small percentage.
**Q Some subset of the 1,800 or some subset of --**
A. No, of the 125 or so.
**Q So, of the 1,800 of the CARD Clinic patient cohort, you've looked at x-rays or CT scans of no more than 150 of them?**
A. That would probably be a fair statement.
**Q And you've looked at pulmonary function**



**tests of no more than twenty-five?**
A. Something like that, twenty-five, thirty, forty. I don't know.
**Q And approximately how much time have you spent in the past year either looking at x-rays or writing a report or doing anything connected with the testimony you're expected to give in the Grace case?**
A. In the last year?
**Q Let's break it down. How about in the past month?**
A. The past month it would be several hours reading some of these materials. But I'm just trying to think, in the last year it would probably be around twenty to thirty hours. Actually, maybe a bit more.
**Q Fifty hours tops?**
A. Not more than that.

- - -

(Exhibit Frank-11 was marked for identification and is attached hereto.)

- - -

BY MR. FINCH:
**Q Dr. Frank, have you ever reviewed the W.R.**



**Grace bankruptcy trust distribution procedures for the settlement of asbestos personal injury claims?**
A. No, sir. I mean, as I look at this, I've seen pieces of it. I have not seen the whole document.
**Q You've seen pieces of it and you are aware that Dr. Whitehouse has opinions about certain aspects of the Grace trust distribution procedures --**
A. As do I.
**Q As do you -- medical and exposure criteria; correct?**
A. Right.
**Q And for purposes of -- we keep calling these colloquially TDP. Have you ever been asked to design medical exposure criteria for an asbestos bankruptcy trust to evaluate and, if the trust determines, appropriate to offer a settlement to resolve personal injury claims?**
A. No.
**Q Have you ever been asked to design claims evaluations and settlement procedures for any kind of asbestos-related disease payment vehicle beyond a trust?**



A. No.
**Q So, you haven't been asked to create those criteria for any kind of company that has asbestos liabilities?**
A. No.
**Q Or a workers' compensation board?**
A. No.
**Q Or a Federally administered asbestos disease evaluation and payment fund?**
A. No.
**Q Prior to this case -- I think I might have asked you this, but prior to this case have you ever reviewed medical and exposure criteria for a bankruptcy trust?**
A. Other than this one, no. What I did review was the criteria under the asbestos bill that has been pending in Congress.
**Q The so-called Fair Act that was --**
A. The very unfair Fair Act, yes.
**Q I would agree with that. But the so-called Fair Act that was proposed in various points in time during 2002 and 2006 that ultimately was not enacted?**
A. Correct.

**Q You've reviewed the proposed criteria in that bill?**
A. Yes.
**Q You have some opinions about certain of the medical and exposure criteria in the Grace TDP; is that correct?**
A. Yes.
**Q I have read Dr. Whitehouse's reports and I've read your reports, and I think I understand everything that either of you criticized about the medical and exposure criteria in the TDP, but let me just see if I can go through them. What is the basis for your criticism of the medical and exposure criteria of the TDP?**
A. That I believe some of them are unreasonable or not supported by good science particularly.
**Q And your belief that they are unreasonable is from a medical perspective; correct?**
A. Yes. I mean, I'm not going to comment on the reasonableness, for example, of the dollar amounts. That's not something I have any particular knowledge about. I can have a personal opinion, but I have no expertise or knowledge about how these sums get arrived at. But I think





I can comment on the medical reasoning --
**Q The medical reasoning behind the medical and exposure criteria?**
A. Correct.
**Q I haven't seen anyone from Libby, or at least either you or Dr. Whitehouse, criticize either the diagnostic or exposure criteria for mesothelioma; is that correct?**
A. Well, if you want to go by one by one, we can do that. Well, the diagnosis of mesothelioma, I presume to be a tissue or clinical diagnosis. I don't know what Grace exposure is defined by section 5.7 (b)(3) is, so I can't comment on that.
**Q But you haven't expressed any criticism of the definition of exposure for any of the disease categories in any of your reports; is that correct?**
A. There is no definition of exposure for mesothelioma that I see here. I don't see any for --
**Q Well, one of the ways the TDP works, would you agree, is that all of the disease categories require Grace exposure, as defined? Do you see that?**





A. I would think it be appropriate if you are going to collect money that has been derived from a particular company that you would be able to prove that you had exposure to that company's product, I take that as a reasonable thing. But the amount of exposure, as you've already determined in some earlier questions, can be anything above background. So, theoretically, one day of exposure would be relevant.
**Q Do you have any criticisms of the exposure criteria for any of the diseases that are listed on page twenty-four through twenty-seven of the TDP?**
A. Well, it says on page twenty-four, Lung Cancer 1, quote, "significant occupational exposure", with footnote five, which refers to a section that I have no knowledge of. So, I don't know what the definition significant occupational exposure would be. To me, significant exposure would be, you know, as little as a day of exposure. If it requires more than that, I think that would be inappropriate.
**Q But you haven't expressed that opinion in any of the reports that you've written here. I**





**haven't seen it in Dr. Whitehouse's report, that you criticize the exposure criteria of TDP?**
A. Correct. You're asking me now, I'm giving my opinion now.
**Q Well, then let's -- if the medical exposure criteria in Grace exposure -- why don't we take a look at 5.7 (b)(3). It's on page forty-two.**
MR. HEBERLING: Nat, at this point I should inform you that based up the Welch deposition, I think we'll be adding an objection to the criteria on the basis that CT scans apparently are not permitted for Level IV, so you should ask about that as well.
MR. FINCH: I will, but let's keep going.
THE WITNESS: So, page forty-two, significant occupational exposure --
BY MR. FINCH:
**Q No, no. 5.7 (b)(3), page forty-two, Grace exposure.**
A. Grace exposure; okay.
**Q Grace exposure says, "The Claimant must demonstrate meaningful and credible exposure to any asbestos-containing products marketed by**

**Grace." Or, in clause two, "Meaningful and credible exposure which occurred prior to the effective date." That means whenever this bankruptcy claim gets confirmed "To asbestos, asbestos-containing winchite asbestos or unexpanded asbestos-containing vermiculite ore in Lincoln County, Montana or asbestos, asbestos-containing winchite or asbestos-containing vermiculite ore from Lincoln County during transfer to use prior to completion of a finished product and expansion plan." And there's no time limit on how long that exposure --**

MR. HEBERLING: Objection; compound.

BY MR. FINCH:

**Q -- has to be. Do you have any criticism of that as an exposure criteria for mesothelioma?**

MR. HEBERLING: Objection; vague as to what "that" may mean and compound.

THE WITNESS: There is no specific time frame, but I don't know what the term "meaningful and credible exposure" is. So, without a definition of that, see, for example the section above has a number and I would





disagree with the number, for example.

BY MR. FINCH:

**Q The number of what?**

A. Five years of "significant occupational exposure means employment for a cumulative period of at least five years". I think significant occupational exposure can occur in a matter of days.

**Q Do you understand the difference between the presumptive criteria in the TDP and individual review?**

A. Those are not terms I tend to use. I understand "presumptive criteria" are sort of a baseline of what can be applied to lots of people. An individual review by the term, I take it to mean, applies to individuals.

**Q Do you understand that if someone doesn't meet the presumptive criteria, they can have their claim individually reviewed and they could still qualify for a settlement even if they don't meet the presumptive criteria? Do you understand that's the way the TDP works?**

A. That, I understand is the process, but my understanding is that the individual review need





not be done by a physician, and that someone, perhaps untrained in the science of asbestos might be making these adjudications, which I think would be inappropriate. And I think to have this specificity of time doesn't reflect what disease people can actually develop.

**Q The cynical occupational exposure requirement doesn't apply to people who were exposed in Lincoln County, Montana; do you understand that?**

A. If you tell me that that's what it is, I'll take that to be a given, but I have no basis to understand that, never having seen this before. And going back to the next section 5.7 (b)(3), I don't know what "meaningful and credible exposure" is, and it may not have a time frame, but I don't know what that is.

**Q If you assume that meaningful and credible means any identifiable exposure to asbestos that someone -- the evidence for which would be something that you could rely on, would that be sufficient exposure to cause mesothelioma?**

MR. HEBERLING: Objection; misstates the document.





THE WITNESS: I think simply living in Libby is reliance enough; that means you were exposed above background, and if you ended up with disease, that should be sufficient.

BY MR. FINCH:

**Q On the next page, forty-three, where it says, "That meaningful and credible exposure evidence may be established by an affidavit or sworn statement of the claimant or co-worker by invoices, employment, construction or similar records or by other credible evidence." That's how it can be established. So, in your view if someone has an affidavit that says I worked around Grace Monokote for a day, that would be sufficient to cause mesothelioma?**

A. Yes.

**Q And, similarly, if someone were to submit an affidavit that said I lived in Lincoln County, Montana for a day, and while I was there, I know it was -- you know, I lived there for at least a day, that would be sufficient to cause mesothelioma as long as there was some evidence they breathed the air while they were there?**

A. Well, unless they were using a scuba pack,

you know, for all the time that they were there or a respirator, yes. I mean, that's from a scientific standpoint. Obviously, issues other than science come into effect when you're putting together documents like this. But if you're going to use a scientific basis to do it, you ought to use the most accurate science, and then other decisions can be made that have nothing to do with science, but at least science should be accurate.

**Q For purposes of the definition of Grace exposure, would you agree with me that there is no minimum time period required in the definition in section 5.7 (3)(b)?**

MR. HEBERLING: Objection; misstates the document.

THE WITNESS: It does not speak to a time period, but it talks about meaningful and credible exposure, which I don't understand as to what that is without a time frame.

BY MR. FINCH:

**Q But it doesn't say you have to have six months exposure, five years exposure to be Grace exposure?**

A. It does not.





**Q It doesn't seem to say you have to have a week of exposure, it just says "some exposure"; correct?**

A. "Meaningful and credible". It doesn't say some exposure.

**Q It says "meaningful and credible exposure".**

A. Whatever that's taken to mean.

**Q Okay.**

A. And it's a very vague statement and it obviously can be interpreted many different ways. What might be meaningful and credible to one person may not be to another for different reasons, but on a scientific basis, meaningful would be, you know, living one day in Libby.

**Q And also working around Grace construction products that had Libby vermiculite in them for one day?**

A. Correct.

**Q For lung cancer, you would agree with me that things, in addition to asbestos exposure, cause lung cancer; correct?**

A. There are many things that cause lung cancer.

**Q So, if you were trying to be more certain**





**rather than less certain that a lung cancer was caused by asbestos exposure as opposed to smoking, what sort of medical criteria would you look to?**

A. If you have both exposures there's no way. You can't say it was more likely due to one or the other, both contributed. That's the only scientifically tenable position. You can't say it is more likely due to this or more likely due to that, and if someone had yet a third carcinogenic exposure for lung cancer, you would have to include that as well. But there's no way that you could discount if someone develops a lung cancer had exposure to vermiculite or Libby asbestos, whatever term we're using, that it wouldn't have a role.

**Q So, I take it in your view six months of Grace exposure in order to contribute to causing lung cancer would be medically unreasonable?**

A. It's capricious and arbitrary, not backed by science.

**Q Okay.**

A. Selikoff has data from an asbestos factory that less than a month doubled the risk of lung cancer. So, to say you have to have six months,





you know, is not grounded in science.

**Q At least if you're evaluating it purely from a scientific basis as opposed to what level of proof you would need to prove a case in a courtroom?**

A. That's a different issue. I mean, that's what lawyers argue about. I'm a physician and scientist, and I'm being asked to look at it from that perspective. You know, if somebody designated me Czar for the day to create a document, you know, maybe I would do it differently, but that's not the part of this document that I'm here to talk about, you know, in terms of the dollar value or whatever else.

I am here to talk about the reasonableness of the scientific criteria, and then I could make some comments as to, you know, what the values are in terms of the relationship to, you know, what it cost to take care of people and is this a reasonable amount of money.

It's one of the same criticisms I had of the Fair Act, that the upper limits, for example, wouldn't in many cases pay for the cost of treatment much less all the other issues that

are normally thought of with regard to litigation over an asbestos malignancy, let's say.

**Q So, the criticisms you have the exposure criteria are that -- what are your criticisms from a scientific basis of the exposure criteria for any disease other than mesothelioma?**

MR. HEBERLING: Objection; compound.

THE WITNESS: Well, why don't we take them one by one.

BY MR. FINCH:

**Q Sure.**

A. So, let's take lung Cancer 1. It is unreasonable to consider point number one that you need bilateral asbestos-related nonmalignant disease. Again, if you look at the scientific literature, not that there aren't some people that say that you require evidence of disease of a different nature, but the vast consensus would clearly state that it is not necessary to have evidence of a nonmalignant asbestos-related disease to relate a lung cancer to asbestos. So, that is unreasonable.

The six months criteria is





unreasonable. The significant occupational exposure, as defined here, you know, seems unreasonable. And it says "supporting medical documentation establishing asbestos exposure as contributing factor", I don't know what that means. It's not medical documentation. It's documentation that you had exposure, which can come from other than -- I mean, it could come from a medical setting in where a doctor says, did you have such and such exposures, but this being a legal proceeding, somebody could write an affidavit and that would be documentation of exposure if it was, in fact, accurate.

**Q Well, one medical documentation could be a letter from the doctor saying in my opinion the asbestos exposure was a contributing factor in causing lung cancer. So, that's --**

A. It says "establishing asbestos exposure as a contributing factor". I mean, if you want to say that you need such a document, yes, but, again, you know, one could take another view of this. There are other settings in which there's certain presumptions. Fire fighters who get heart attacks in New York City are presumed to have gotten





related to work. I mean, it's just a presumption.

Here in Philadelphia I've dealt with a case of a prison guard with hepatitis C, it was presumed that he got it at work. That was written into the criteria. So, you could say that you don't need a medical opinion, you know, relating the two.

You can simply say in a similar vein. If you were documentably exposed to Libby asbestos and developed lung cancer, it's a presumption that it had a role in the development of that lung cancer and it wouldn't need medical documentation. You would need the documentation of the exposure and documentation that that was the disease, but you wouldn't need somebody to make that linkage.

**Q But that would be true, not just for people who were exposed to Libby asbestos, that would also include, to the extent there were any Grace claimants who were exposed to the portion of Grace asbestos-containing products that didn't have the Libby asbestos in it, that would apply to them as well; correct?**

A. You could make it apply to them as well, yes.





**Q So, your view as a medical doctor is anybody who had exposure to Grace asbestos-containing products, regardless of whether they have Libby amphiboles in it or not and developed lung cancer, you would presume that the asbestos exposure was a contributing factor to the lung cancer?**

A. Yes.

**Q What about --**

A. The other problem I have with the statement, and it's similar in other statements, "this is a primary lung cancer". It doesn't define the cell types. Not every primary lung cancer would be asbestos related. There are three cell types that I recognize as being related. There are other primary lung cancers that I would not think are asbestos related.

At least in Lung Cancer 2 the statement is "in causing the lung cancer in question", which at least you can read into that that it would have to be of an appropriate cell type. And in Lung Cancer 1, that's not there.

**Q Well, a lung cancer is whether there is a contributing factor in causing the cancer in question?**

A. The lung cancer in question; okay. So, again, you could write that into the criteria, that it was a squamous carcinoma, adenocarcinoma or small carcinoma, the presumption is that there was a relationship. If it's any other cell type, such as a carcinoid or a sarcoma or lymphoma of the lung, those would not be related. So, you can eliminate a lot of the need for review and make this a lot simpler or straight forward if you wrote more of those criteria into this and, in fact, made certain presumptions. And then obviously the question is, you know, where do you want to set the bar? And from a scientific standpoint, there's no question that if you're exposed to asbestos and get lung cancer, the two are related. If you want to put other barriers in there, that means you're keeping people out. It's the same issue that I found unfair in the Fair Act. There's a certain unfairness to these kinds of criteria.

**Q But the unfairness with respect to these types of criteria, in your view, aren't just specific to people who live in Libby, Montana, they would apply to all people who were suing**





**Grace?**

A. Agreed.

**Q So, there's nothing unequal about the treatment of the Libby claimants with respect to the exposure criteria for lung cancer as compared to other Grace claimants?**

A. The science is the same. There may well be some difference between Libby claimants and other claimants that go beyond the science. But in terms of the science, it is the same. It doesn't matter where you get exposed or to what the nature of the asbestos exposure was.

**Q So, to the extent that the exposure criteria in the TDP are, and this is for mesothelioma and lung cancer, to the extent that the exposure criteria in the TDP for mesothelioma and lung cancer are unfair or unreasonable in your view from a medical science perspective, any deficiencies would be the same for Grace claimants outside of Libby as for people in Libby?**

A. To that extent, yes.

**Q Why don't we take a little break. We've been going for about an hour and twenty minutes. I would like to take a five minute break.**





A. Okay.

- - -

(Whereupon a short break was taken at this time.)

- - -

BY MR. FINCH:

**Q We were looking at the exposure criteria for lung cancer. Let's go to the Asbestos Pleural Disease Level II.**

A. Okay.

**Q The Asbestos Pleural Disease Level II, would you agree with me that that has an exposure criteria and a medical criteria?**

A. It has a medical criteria in item one. It has two exposure criteria. I'm not sure I particularly understand them. It's a six month Grace exposure and for claimants whose Grace exposure is not described in clause two of the definition of Grace exposure, which I'm not sure what that refers to, five years a cumulative occupational exposure asbestos, which I think is totally inappropriate.

**Q But to the extent it is totally inappropriate, it would be equally inappropriate**





**to construction workers who were exposed to Monokote as it would be to people who live in Libby?**

A. Correct.

**Q Now, for diagnosis of a bilateral asbestos-related nonmalignant disease, the definition of that is found in footnote four on page twenty-four. Do you understand that?**

A. I do.

**Q I didn't see in either your reports or Dr. Whitehouse's reports any criticism of the requirements for diagnosing bilateral asbestos-related nonmalignant disease for the asbestosis pleural disease category; is that correct?**

MR. HEBERLING: Objection; misstates the reports. There's an objection to use of "bilateral".

THE WITNESS: I don't recall all the details of what's in the report.

BY MR. FINCH:

**Q What if any criticism do you have of the medical criteria for bilateral asbestos nonmalignant disease as that criteria is applied**

ARTHUR L. FRANK, M.D., PH.D.

**to the Asbestos Pleural Disease Level II?**

A. The reason for that is, I think, comes from two directions. One is that I believe the data would show that about seven percent of people with asbestos-related nonmalignant disease have it unilaterally, so it cuts out those individuals.

I would be happier with something along the lines that if it was bilateral, then, again, it was presumptive because, for example, if you look at the ATS criteria, bilateral pleural changes is almost always related to asbestos. And then if you had only unilateral disease, then you would require careful documentation of no prior disease or trauma that could explain it leaving as the only reasonable explanation the asbestos exposure. For example, if someone had had a unilateral pleural thickening but had a severe trauma in an automobile accident or a knife wound or a gunshot wound, those, then, would perhaps not qualify. But even unilateral disease with the exclusion of other causes, there is reason to say they shouldn't qualify.

**Q So, your only criticisms of the medical criteria for Asbestosis Pleural Disease Level II**



ARTHUR L. FRANK, M.D., PH.D.

**in the definition of bilateral asbestos-related nonmalignant disease is that it requires the disease to be bilateral; is that correct?**

A. That's the only medical criteria that's there.

**Q Well, you don't have any criticism with the methods for establishing bilateral asbestos-related nonmalignant disease --**

A. Well, I didn't finish reading all of that that.

MR. BERNICK: Give him some time.

THE WITNESS: I got halfway through it. But, no, I would say that those are reasonable.

BY MR. FINCH:

**Q So, the criteria for bilateral asbestos-related nonmalignant disease, other than the requirement that it be bilateral, the radiographic or pathology criteria or CT criteria set forth in footnote four you believe is reasonable?**

A. Well, there are CT criteria.

**Q Well, the fact that you can qualify by CT.**

A. All right, but there's no criteria.



ARTHUR L. FRANK, M.D., PH.D.

**Q I understand that.**

A. It just says CT read by qualified physician. Yes, that would be appropriate. One zero or higher I agree with. Evidence of bilateral plaques, thickening, calcification, et cetera. Again, I don't agree with the bilaterality, but if you're going to use that that would be not be inappropriate. And then the pathology, I'm familiar with the pathologic grading system, though, again, I'm not a pathologist and don't use it and don't know all the fine points of it, but that is another way to establish that.

**Q And for people who have asbestos-related nonmalignant disease, which is pleural disease, the medical literature suggests that ninety-three percent of them would be bilateral and seven percent would be unilateral?**

A. Yes.

**Q So, to the extent that this criteria were designed to identify the vast majority of people with asbestos-related nonmalignant disease, it would be appropriate; is that correct?**

A. To the extent it meets that comment you made, yes. But it does exclude people, which is,



ARTHUR L. FRANK, M.D., PH.D.

I think, inappropriate. But there needs to be a higher level of proof for documentation if it's unilateral, but that should be considered. It shouldn't be it only must be bilateral, otherwise, you're out of luck.

**Q Well, you understand that if someone doesn't meet these presumptive criteria, they're not out of luck, they can go and demonstrate, for example, someone with unilateral asbestos-related disease could go to individual review and demonstrates exactly what you described as proving that they have been an asbestos-related disease?**

A. But, again, my understanding is the individual review need not be done by physician knowledgeable about disease and the claims examiner who doesn't know that seven percent of nonmalignant changes can be unilateral has no scientific basis to know how to evaluate that.

**Q You don't know what resources the trust will have if a claims handler had a question about that to ask a doctor; do you?**

A. I do not know.

**Q And so you can't say how the trust is going to apply these criteria would be reasonable or**

**unreasonable as you're sitting here in the context of --**

A. How it's applied is not a question of it's reasonable or unreasonable. That's a different question. The question is are the criteria reasonable or unreasonable, and in some ways as I'm telling you they are unreasonable. But how they are applied is a whole different question, and that may or not be unreasonable, but I don't know the procedures by which that will be done.

**Q For Asbestos Pleural Disease Level III -- first of all, you are familiar with the 2004 ATS statement on the diagnosis of asbestos-related nonmalignant disease?**

A. I am.

MR. FINCH: Can we mark this next exhibit?

- - -

(Exhibit Frank-12 was marked for identification and is attached hereto.)

- - -

BY MR. FINCH:

**Q Do you have the 2004 ATS Statement on the Diagnosis and Initial Management of Nonmalignant**



**Diseases Related to Asbestos?**

A. Yes.

**Q And they call them diseases; correct? They divide them into different diseases?**

A. Yes.

**Q Would you agree with me that this statement sets forth recommended criteria for determining whether someone has a nonmalignant disease related to asbestos?**

A. Yes.

**Q Would you also agree with me that the 2004 ATS statement doesn't give you any criteria for dividing nonmalignant diseases according to severity of lung function impairment?**

A. Correct. Either you have the disease or you don't have the disease.

**Q Right. And if you have the disease, lung function impairment is not required to have an asbestos-related nonmalignant disease; correct?**

A. Correct. That's never been the case. I mean, as physicians we can also make the diagnosis even with perfectly normal pulmonary functions.

**Q And if one of the goals of the TDP is to ensure that more money goes to people who have**



**greater degrees of lung function impairment, the 2004 ATS document doesn't tell you anything about how to grade people based on how severe their lung function declined as a result of asbestos-related disease?**

A. Correct.

**Q So, looking at the criteria for asbestos pleural disease on page twenty-six of the TDP.**

A. Level III.

**Q Level III. Would you agree with me there is a diagnosis requirement which includes either a radiographic or pathology or x-ray evidence?**

A. That's redundant; radiographic and x-ray is the same thing.

**Q Excuse me. Radiographic, CT and x-ray evidence?**

A. Yes. I mean it's the same --

**Q It's the same as for category two?**

A. Presumably, yes. The diagnosis based upon footnote four.

**Q So, would it be correct that your only criticisms of the diagnosis of bilateral asbestos-related nonmalignant disease for Level III would be the same as the criticisms you have**



**for Level II?**

A. Yes.

**Q And then it has an exposure criteria?**

A. Correct.

**Q And your criticism of the exposure criteria is, I take it, that in your view the duration of exposure is too long --**

A. I haven't made that statement, nor did I make it with regard to the other statement. We didn't discuss the time frame with regard to this. I will grant you -- let me be clear about that. We didn't discuss time with regard to asbestosis or pleural disease. I will recognize that there is a threshold so that some time might be appropriate -- maybe we did discuss it.

**Q No, you're absolutely correct. Let me stop. We discussed the time requirement with respect to the exposure criteria for mesothelioma and lung cancer; correct?**

A. Correct.

**Q And it's your opinion that six months exposure is not necessary to attribute -- six months asbestos exposure is not necessary to contribute a lung cancer, at least in part, to**

**asbestos exposure?**
A. I would say a minimum of six months, which is what it says.
**Q Right. A minimum of six months is too restrictive or it's too difficult to meet; correct?**
A. Correct.
**Q And that's true for Libby claimants as well as people outside of Libby?**
A. Anything we're going to talk about with regard to criteria probably are not going to be different for who it is. I mean, if you're talking about the science, it's the same science.
**Q So, now we are looking at nonmalignant disease criteria, so I didn't ask you whether or not you have an opinion about whether the duration of exposure criteria for the nonmalignant disease is appropriate or not?**
A. You did not.
**Q What is your opinion about whether the duration of exposure criteria for the nonmalignant disease is medically reasonable or not for purposes of the Asbestos Pleural Disease Level II?**
A. I think the requirement that there be five





years of occupational exposure is unreasonable. I do not think it is unreasonable to say that there is some threshold and that some judgement should be made about adequacy of exposure. The problem with the threshold issue is there is no number I can give you, and if you look at the literature the numbers vary by orders of magnitude as to what that number is. But it is not unreasonable to have some minimal time of exposure to develop --
**Q An asbestos-related nonmalignant disease?**
A. -- nonmalignant disease. Now, the five year requirement for occupational exposure is unreasonable.
**Q Okay.**
A. And if you go to the scientific literature, Selikoff, for example, has papers on short-term exposure and the subsequent development of disease, and even six months of exposure in an occupational setting can give you disease.
If we had some good number that we can go by we could use that, but there is no such good number. So, again, some judgement is appropriate, but I would disagree with the five years of occupational exposure.





**Q If the five years of occupational exposure doesn't apply to the Libby claimants, would you agree with me that six months of exposure to the Libby asbestos is a reasonable judgement as to a threshold amount, if you will, since you could attribute a nonmalignant disease to exposure to asbestos?**
A. It is a number for which there would be no scientific basis. It is probably not unreasonable.
**Q So, to the extent Dr. Welsh and others hold the view that for the nonmalignant disease categories, and that would be category Level IV, severe asbestosis or severe pleural disease, or asbestosis pleural disease Level III and then the asbestos pleural disease Level II, a six month exposure to asbestos requirement for those diseases is at least not unreasonable?**
A. I would put it to this way, the idea of some threshold is not unreasonable. So, for example, someone who spends a day in Libby and has subsequently been shown to develop nonmalignant disease, I would say that that would not be a reasonable relationship unless there were other





exposures to asbestos and in other settings and then you would have on say that one day is contributed to whatever. What might be different, and, again, there is no science that will support this in a scientifically supportable way, is that we don't really know given the Libby asbestos material, which is, in fact, a one fiber, one component of which is well-known, which is tremolite, but the other fibers the whip winchite and richterite, there is no scientific knowledge about those and that what I would say, and this is -- you know, again, there's different ways to handle this. One might say if someone had even four months exposure, let's say they lived in Libby for four months, subsequently were shown to have pleural disease, then I would have a higher order review to document if they did or did not have in any documentable exposure to asbestos in any other setting; did they work with asbestos, did they live near a shipyard, did they live near another asbestos producing facility, et cetera, et cetera. And that if one could document that the only known exposure was being in Libby, because we don't have good science, it might be four months

might be enough anyway, but you could reasonably set some minimal number to go by, and six months, for example, would not be unreasonable, and that's just a judgement, there's no science that says that, but that's not an unreasonable judgement, but allowing for the fact that there may be individual cases, those might go to individual review that if somebody had nonmalignant disease with no other exposure except something less than six months in Libby, could it be attributed to Libby.

**Q So, if you assume that the vast majority of people in the Libby claimant population, and I don't mean people who have sued or otherwise would sue W.R. Grace and they live in or around Libby, Montana, have at least six months exposure to asbestos, if the six month exposure criteria is reasonable as to them?**

A. I would think that reasonable.

**Q And as to other Grace claimants with a six month exposure criteria to attribute a nonmalignant asbestos disease to Grace would be a reasonable thing?**

A. If it's reasonable for one, it should be





reasonable for somebody else, too.

**Q So, that would cover the exposure criteria for all the nonmalignant diseases; because would you agree with me that the exposure criteria for all the nonmalignant diseases is the same?**

A. Well, they all talk about six months Grace exposure. They don't all talk about the five years of occupational exposure.

**Q Well, they all have the six month Grace exposure?**

A. Right.

**Q And --**

A. But they don't all have the five year.

**Q Right. Category two and one don't have the five years; correct?**

A. No. Category four and three don't have the five years. Only category two has the five years.

**Q For the Asbestosis Pleural Disease Level III, there's also a lung function criteria; correct?**

A. Correct.

**Q What, if any, criticism do you have of the lung function criteria for the Asbestosis Pleural Disease Level III?**





A. I think the total lung capacity less than eighty percent is reasonable, an FVC less than eighty and the requirement that the ratio being greater than or equal to sixty-five is probably not supportable. There's no scientific basis to say that that's a requirement that one should have.

**Q What is DLCO, D-L-C-O?**

A. Diffusion capacity.

**Q How, if at all, does being a smoker or former smoker impact DLCO?**

A. It depends. It may impact it not at all. It may impact it if you have severe emphysema. That would be the only thing that I could relate. The DLCO isn't even listed here. You know, that's one of the things -- you know, it's funny, the tests that are being used are all ones that are, to a certain extent, and people have argued, they are manipulable by the individual. You could work harder or not harder. You could have -- you can make the numbers change. Something like the DLCO, you have no ability to change that, and yet that's not one of the criteria.

**Q One of your criticisms in your report**





**relates to the fact that DLCO, by itself, is not something that could be used to qualify for the TDP criteria, the requirement impairment?**

A. Can you show that to me? Or what page are you talking about where that is what it says?

**Q Actually, I'll withdraw the question. Frank-4 is your rebuttal to Dr. Welch's report?**

A. Yes.

**Q Do you see that?**

A. I do.

**Q On page two of this you write that you're citing to the Whitehouse 2004 paper. In his paper, Whitehouse describes that in his opinion the majority of the 1,500 people who have radiologic changes of asbestos exposure are at an increased risk for a progressive loss of lung function from pleural changes alone or from potential future development of interstitial fibrosis. Do agree with that?**

A. Yes, I do.

**Q Can you quantify that increased risk?**

A. No. You know, in the future we can go back and look and see what the rate was, but there's no way to predict what that will be, and it's going

ARTHUR L. FRANK, M.D., PH.D.

to vary from individual to individual.

**Q Do you hold the view that if someone has nonmalignant -- remember how we talked about the 1,800 CARD Clinic patient cohort?**

A. Yes, sir.

**Q Of those 1,800 people, do you have any opinion about how many of them will suffer a decline in lung function?**

A. Well, they will all suffer decline in lung function, a decline greater than what occurs with aging, and I can't tell you what the percentage would be that will have abnormal declination of their lung function. Again, the future will tell us what that number is, but why I certainly can agree with the statement, it simply says that these people are at an increased risk of progressive loss of lung function, not that any one individual will suffer it.

**Q So, you wouldn't be able to say, for example, a person who has been diagnosed with pleural disease in Libby would have a seventy percent likelihood of progressing to severe disabling pleural disease that affects their ability to breathe beyond the normal decline you**



**ARTHUR L. FRANK, M.D., PH.D.**

**would expect.**

A. No. And nobody has ever said that. Nobody has made that statement. They're just saying that those people are at an increased risk of declination, but not who it will be or what the percentage of them will be. But they are all at an increased risk. We won't know until the end of their lives which ones did or which ones didn't.

**Q Dr. Whitehouse has also done something called a CARD mortality study?**

A. Yes.

**Q Of the 1,800 people in the Libby patient cohort, do you have opinions about what percentage of them will die as a result of an asbestos-related disease?**

A. Again, we wouldn't know. To date those people that have died represent somewhere, what is it, around sixty percent or so people with nonmalignant disease have died of an asbestos-related disease.

**Q But you wouldn't be able to say that based on that that sixty percent of the 1,800 people who have been shown to have pleural changes on x-ray are going to die of an asbestos-related disease?**



**ARTHUR L. FRANK, M.D., PH.D.**

A. No. What I said was up-to-date of those who have had disease and have died, sixty percent have been related to asbestos. So, you can say that it is likely that many of these people will die, but I can't tell you what the exact percentage is. Again, the people who are still alive are the survivors and they may die of something else. So, the longer it goes, it may be that they are less likely to die of an asbestos disease or the longer it goes it may be that they will live long enough to get the cancers and die of those.

**Q So, you wouldn't say that it is more likely than not that every person who has pleural disease as a result of exposure to asbestos in Libby, Montana is going to die from asbestos-related pleural disease?**

A. I would not be able to say that.

**Q And you would not be able to say it is more likely than not that anyone who has been diagnosed with pleural disease in Libby, Montana is going to suffer a severe lung decline?**

MR. HEBERLING: Objection. Unclear as to whether we're talking about individuals or a group.



ARTHUR L. FRANK, M.D., PH.D.

THE WITNESS: Well --

MR. BERNICK: I object to the form of the question, too.

MR. FINCH: Let me rephrase the question.

MR. BERNICK: There may be other grounds as well.

MR. FINCH: I'll withdraw the question.

THE WITNESS: I think I know what you're trying to get at, but --

MR. BERNICK: There's not a question.

THE WITNESS: But there's no question pending, so I won't answer it.

MR. FINCH: The question is withdrawn.

BY MR. FINCH:

**Q I take it, then, that you would not express an opinion if someone presents with pleural disease as a result of exposure in Libby, Montana, and has normal lung function test scores right now, you wouldn't give an opinion that it's more likely than not that that person is going to die**

**from asbestos-related pleural disease?**
A. Correct.
**Q The 2000 ILO Classification document, are you familiar with that?**
A. To a certain extent. I've not particularly studied it in great detail.
**Q Are you aware that that document requires the blunting of the costophrenic angle before you would call pleural changes on x-ray diffuse pleural thickening?**
A. That is what that document says. Other people have not taken that to be a requirement, but that's what document says.
**Q Can you turn to the 2004 ATS statement?**
A. I have it. What page?
**Q 707. In your view, in order to classify pleural disease as diffuse pleural thickening, does the ATS statement require blunting of the costophrenic angle?**
A. It's not very well written, but one could interpret that it does say that.
MR. BERNICK: I'm sorry; could I have that last question read back?
- - -





(Whereupon the preceding question was read back.)
- - -
MR. FINCH: Why don't we take a break.
- - -
(Whereupon a short break was taken at this time.)
- - -
(Exhibit Frank-13 was marked for identification and is attached hereto.)
- - -
BY MR. FINCH:
**Q Dr. Frank, Exhibit Thirteen, is that the article that you co-authored with Laura Welch and a bunch of other people?**
A. Co-authored in a sense, to be honest, Laura wrote it, sent it around, we all made whatever comments we wanted to make and then fifty-one of us, I believe, signed on.
**Q So, you have reviewed it and you agreed with the opinions and the statements as expressed in the final document?**
A. Correct. To the extent that I agreed to put





my name to it, yes.
- - -
(Exhibit Frank-14 was marked for identification and is attached hereto.)
- - -
BY MR. FINCH:
**Q Frank Exhibit Fourteen, what is that document?**
A. It's an article from Environmental Health Perspectives, April 2007, the Sullivan paper called "Vermiculate; Respiratory Disease and Exposure in Libby, Montana, Update of a Cohort Mortality Study."
**Q Are you familiar with this paper?**
A. I believe I am. It's been a while since I've seen it, but I have seen it in the past.
**Q What is the difference between a cohort mortality study and a case control study?**
A. A cohort mortality study is a defined group that you follow over time. A case control study is a collection of cases, not necessarily requiring a control.
**Q And what is a series of case reports?**
A. It's a series of case reports. You can make





decisions based on a series of case reports. You don't always need epidemiological data, but it's a different kettle of fish.
**Q Would you agree with me that Dr. Whitehouse's 123 patient progression study that he describes in his 2004 paper is not a cohort study?**
A. Is not a cohort study.
**Q And it is not a case control study?**
A. He doesn't have controls. I mean, he has controls for the pulmonary function value, but he didn't go out and a control for every patient.
**Q And how would you describe that paper?**
A. A descriptive epidemiological study.
**Q And what is a descriptive epidemiological study?**
A. It's a study that looks at a group of individuals and describes what occurs in that group.
**Q Does that descriptive epidemiological study allow you to make comparisons as between that group and other cohorts?**
A. Well, first of all, it's not a cohort.
**Q Other groups of people?**
A. It may or may not. It depends on what is

being studied and what the other comparisons are.

**Q You weren't involved in Dr. Whitehouse's 2004 paper?**

A. I was not.

**Q Were you involved in any way in his 2008 paper on mesothelioma?**

A. I mean, I had nothing to with writing it or anything like that. I can't remember if I was a reviewer for the journal or not. I review so many articles, I can't remember if I did or did not review that, or if I just saw it when it came out.

**Q What's a longitudinal study?**

A. A longitudinal study is a study following individuals over time or -- that's really a cohort study. A longitudinal study is looking over time at a population experience with disease. So, you might, for example, take a factory and look at all the workers in 1950 and then look at the workers again in 1955 and, again, in 1960. That would be a longitudinal study. It's not that you would necessarily have the same workers there at each point in time.

**Q For the 1,800 CARD Clinic patients, living patients, would you agree with me that nowhere in**





**any of Dr. Whitehouse's reports does he report what percentage of those people currently are suffering from any kind of lung function impairment?**

A. I don't recall that there is a published document as to what percentage of those 1,800 have pulmonary function impairment.

**Q Have you done any kind of analysis to compare the exposure histories and the amount of asbestos exposure which 123 patients in the 2004 paper experienced as compared to the 800 people in the Libby patient cohort?**

A. Nobody has done that. It's all descriptive. It's not quantitative in terms of their exposure. And the best you can do is quantify them by various groupings. Employees of Grace, family members of Grace, community exposure, but, again, there's no documentation or measurements that would apply to any one of those individuals as to exactly how much exposure they had.

**Q Would you agree with me that in general the people who worked at the Grace mine had, on average, significantly higher exposure to asbestos than the community exposures?**





A. On average, of course.

**Q And, in general, would you agree that the greater the asbestos exposure you have, the more likely it is you are to suffer an asbestos-related nonmalignant disease?**

A. Yes.

**Q Would you agree with me that the more exposure you have, the more likely you are to suffer a lung function decline as a result of nonmalignant asbestos disease?**

A. That is probably true, yes. That's not really been studied directly. There's no literature that I'm aware of saying that depending on how much exposure you have, usually it's related to some surrogate of that, such as advanced abnormalities on x-ray which tend to occur with greater exposure rather than a question of lung function versus exposure.

**Q Diffuse pleural thickening, would you agree with me that diffuse pleural thickening is an asbestos-related disease that occurs outside of Libby, Montana?**

A. Certainly.

**Q And in cohorts of people with pleural**





**disease, approximately nine to twenty percent typically have diffuse pleural thickening as compared to pleural diseases not pleural thickening?**

A. I have not studied that, so I can't tell you that I know that that number is correct. Obviously you get a larger number with discrete disease compared to diffuse disease. But I don't know what the exact number would be.

**Q Are you familiar with Ruth Lillis 1991 --**

A. Right, it's eighty/twenty percent; eighty and twenty in there.

**Q And that paper also demonstrates, does it not, that of the people -- that the diffuse pleural thickening, the people tend to suffer much more significant lung function declines than the people that don't have diffuse pleural thickening?**

A. Yes, as a general proposition. But it also points out that you can't go by the amount of disease to correlate with how much abnormal pulmonary function she had. She had no significant difference of the group, for example, of diffuse pleural disease. There was no significant difference between those that had a

lesser amount compared to those that had a greater amount.

**Q But there was a big difference between people who had diffuse pleural thickening as to people who had pleural disease that wasn't diffuse pleural thickening?**

A. There was a difference, yes.

**Q In terms of their lung function declines?**

A. Yes.

**Q All right. Why don't we mark that paper for the record, so the record is clear what we're talking about. I know what you're talking about and you know what you know what you're talking about, but let's mark it.**

**- - -**

**(Exhibit Frank-15 was marked for identification and is attached hereto.)**

**- - -**

**BY MR. FINCH:**

**Q Frank-15, is that the Lillis paper of 1991 that you were thinking of when I asked you questions about --**

A. Yes, it is.

**Q -- the impact of diffuse pleural thickening**





**on lung function?**

A. Yes.

**Q All right.**

MR. FINCH: I'll pass the Witness.

- - -

(Whereupon a short break was taken at this time.)

- - -

EXAMINATION

- - -

BY MR. BERNICK:

**Q We are back on the record. My name is David Bernick, and I represent W.R. Grace in connection with its bankruptcy, and I'll be asking you some questions here as we go forward probably for the next couple of hours. I listened pretty carefully this morning, Dr. Frank, to your testimony and I heard you make statements or offer opinions to the effect that something did not have a reasonable scientific basis. Do you recall offering opinions that something was, it usually was some aspect of the TDP, did not have a reasonable scientific basis?**

A. My short-term memory works well enough to





remember I said that this morning.

**Q So the answer is "yes"?**

A. Yes.

**Q Now, does that mean when something had reasonable scientific basis, does that mean it is the only reasonable -- the only scientific answer?**

A. I don't understand the question.

**Q Well, if you say that something does or does not have a reasonable scientific basis, does that mean that that thing, whatever it is, that opinion, is the only answer that can be reached scientifically?**

MR. HEBERLING: Objection; unclear.

THE WITNESS: Science can be looked at in many ways. You will also recall from my answers that there were things that I opined that I said there was no basis in science to say that.

BY MR. BERNICK:

**Q We're going to get to that.**

A. But for those things that there was a scientific basis, I guess one could read the science differently. But I was offering my opinion that I didn't think there was a reasonable





scientific basis to make some of those judgements.

**Q For something in your view, when you use the terms, for something to have a reasonable scientific basis, does it mean that it must be the best scientific answer?**

A. Ideally, science should be done with the best scientific answer, but you could use other answers or interpret the material in different ways. Certainly scientists interpret information differently, so one could come to a different conclusion.

**Q You've used the terms here expressing your opinions for something to have a reasonable scientific basis does that mean that it must be the best scientific answer?**

A. That is not how I used it. If you ask me would I think that that's appropriate, I think if one is going to make a scientific judgement, one should use the best science available. Does that mean that doctors might not differ in their interpretation of what the science says, certainly that can occur.

**Q I appreciate these answers, and you are being responsive, but let me be clear about what**

**I'm getting at. You're offering opinions in the case; right?**
A. Yes.
**Q And we want to know what the basis for your opinions is and we also want to know what tests or standards you apply in expressing an opinion. So, my questions are all designed to found out what tests or standard you apply when you offer an opinion.**
A. It depends on the issue involved.
**Q I haven't asked you a question yet, Dr. Frank. So, I'm now going to refer back to the testimony that you offered this morning. This morning you offered testimony that something did or did not have a reasonable scientific basis. Those were your words.**
A. Yes.
**Q And my question is, for something to have a reasonable scientific basis, must it be the best scientific answers, that test that you applied?**
MR. HEBERLING: Objection; asked and answered.
THE WITNESS: I would think, yes.
BY MR. BERNICK:





**Q So, if a scientific proposition or any kind of proposition within your area of expertise is not the best scientific answer, then in your view it does not have a reasonable scientific basis; is that correct?**
A. It may have a scientific basis, but it certainly isn't the best basis. It's a question --
**Q I didn't ask that. I'm asking for the words "reasonable scientific basis". For something to have a reasonable scientific basis must it be the best scientific answer?**
A. I think it is the most reasonable.
**Q So, "reasonable" means "most reasonable"?**
A. Let me give an analogy back.
**Q Can you just answer the question?**
A. No, no, no. I'm trying to explain my answer.
MR. HEBERLING: Let him explain his answer.
THE WITNESS: I want to explain my answer.
BY MR. BERNICK:
**Q Well, first of all, lower your voice --**





A. Well, you are interrupting me in my answer.
**Q No, I'm trying to get an answer to the question that I've asked.**
A. And I'm trying to give you that answer. You have an automobile wreck and you get your car fixed and you get it painted, and you notice that there's blemishes in the paint job. Now, is it a reasonable paint job? That's a value judgement. You may say, gee, they could have done it better and they could have gotten it completely correct or, you know, it's not quite right, but is it reasonable? That's a value judgement. And you'll say, yes, I'll take the car or you'll say, no, that's not reasonable because it's not as good as it could be. And I think the analogy holds.
**Q Are you done?**
A. Yes.
**Q So, when you say that something does or does not have a reasonable scientific basis, that represents a value judgement on your part; fair?**
A. In part it's a value judgement and in part it's a basis of what the scientific literature says you can say.
**Q Ultimately when you offer the opinion that**





**something does or does not have a reasonable scientific basis, you are making, you, yourself, are making a value judgement; correct?**
A. It's not a value judgement so much as basing it on the science as I understand it and as a scientist I would like to get the best answer, so I would like that paint job to be properly done, not that it is unreasonable to have a few blemishes.
**Q I'm just using your analogy. Under your analogy the paint job could have blemishes and it could still be reasonable?**
A. For some people it could be if they don't want to use the best scientific evidence available.
**Q And for everybody who makes a judgement about whether something is reasonable, there's a value judgement that's involved; correct?**
A. That's probably true.
**Q And when you make judgements about what is scientifically reasonable, I take it your test of what is scientifically reasonable is the test of whether the judgement is the best scientific answer?**

A. Based upon the science that is out there, yes.
**Q Now, would you agree with me that different scientists who are expertly qualified in your field could have different answers as to what is the best scientific result?**
A. From a value standpoint, yes. From a basis of science, then the science has to be supportive of it.
**Q But the same science can be viewed by experts within your field to support different judgements; correct?**
A. Yes.
**Q Not everybody who is an expert in your field completely agrees about what the right scientific answer is; correct?**
A. That applies to most things in life.
**Q And it applies to your discipline in particular; correct?**
A. Yes.
**Q So, when you say that something does or does not have a reasonable scientific basis, do you recognize others within your field could disagree with you about what is a reasonable -- what does**



**or does not have a reasonable scientific basis?**
A. Of course they could disagree with me, but then I would also like to see the science that is supportive of their judgement.
**Q Right. But even when you see the science, they may not agree with you on it; correct?**
A. Well, then the science will speak for itself. They might not agree with it, but one of the nice things about science is that there is some truth to it.
**Q But in your view for something to have reasonable scientific basis, it must be the correct scientific answer; correct?**
A. As close to correct as you can get it to be.
**Q Now, I take it, then, that when you say that something does or does not have a reasonable scientific basis, it's not good enough for that thing, that opinion, to have a scientific basis, it must be the best scientific basis; correct?**
A. Correct, because there is also bad science out there and to base your judgement on bad science, which is still science, is not correct.
**Q So, when you've offered the opinions that you've -- I'll get to that in a minute. You've**



**also talked about things being not scientifically unreasonable. You've offered opinions this morning that something is not scientific --**
A. Correct.
**Q -- reasonable.**
A. The six months of exposure, for example.
**Q Well, whatever it is, you've offered --**
A. Not whatever it is. That was the issue I offered it about.
**Q You offered it about others as well. But when you use the words "not scientifically unreasonable", does that mean that it must be the best scientific answer?**
A. It either means it's the best answer or there is no scientific basis to come up with another answer that is more or less reasonable.
**Q So, that represents, then, a different kind of judgements that you're making?**
A. That's correct.
**Q When you say that something is not --**
A. When there is no science, it's a different judgement.
**Q I try not to interrupt you. Please just don't interrupt me until I finish my question; is**



**that all right?**
A. Yes.
**Q Thank you. So, when you're making the judgement that you offered this morning, that something is not scientifically unreasonable, that is a judgement that you're making where the test is not whether it is the best scientific answer, but whether it is the only scientific answer?**
A. No, it's still --
**Q What's the difference? Explain in your own words.**
A. When there is no scientific basis, then one can make a judgement that is reasonable, but which is unsupported by the science, and I guess you could say it's still the best, but then you could quibble over, to use the example we used this morning, six months, could it be four months, could it be seven months, could it be six months and three days, that sort of quibbling. There's some things where there is no scientific basis that you can point to, then it is still a reasonable judgement and as good as any other judgement. So, there's none that would be better.
**Q Under those circumstances, what's the test**

**ARTHUR L. FRANK, M.D., PH.D.**

**for reasonableness?**

A. If it has some basis in science that can be applied to it.

**Q What does it mean to say that it has some basis in science that can be applied to it?**

A. To say that five years of occupational exposure is necessary to produce pleural disease is not grounded in science, because there's nothing that says that that's what's required. And first of all, it doesn't require occupational exposure, one, and, two, it doesn't necessarily require five years. One can have shorter periods of exposure and still develop disease, and so you look to what is there in the literature. And then on that particular subject, which is what we were talking about, there is fairly little that will address that. And what was reasonable would be something like six months, though, again, I qualified that with some discussion about other ways to deal with it, but it was not an unreasonable construct. Could you say that seven months would be better or five months would have been better? Again, there's no basis. But I gave a judgement that was the best that I could do



ARTHUR L. FRANK, M.D., PH.D.

given that there was no science.

**Q Under those circumstances, where you're saying that it's not scientifically unreasonable, would you agree with me that other reasonable scientists might differ with you about your opinion?**

A. Yes.

**Q And let me ask you this, going back to those views where you said that something does or does not have a reasonable scientific basis, I take it that when you talk about basis there, you mean some scientific study that actually addresses the issue as to what you're offering an opinion?**

A. Yes.

**Q What kind of study does it have to be?**

A. It depends on what the issue is.

**Q Well, but --**

A. It could be an animal study. It could be a cohort study. It could be a series of cases. It depends on what the question is and the level of scientific information you are required to make a judgement. For example, with the issue of the different potency of fibers, there's a lot of information about that, and I just don't think



ARTHUR L. FRANK, M.D., PH.D.

that unbalanced there's enough there yet because there's pieces that are missing from that discussion that allows me to make a judgement.

**Q So, where you don't have a study on point, you can't offer a view about whether something does or does not have a reasonable scientific basis, you have to go back to your other metric, which is to say that something may or may not be scientifically unreasonable; fair?**

A. That's too simplistic a way of putting it, but that is one way you could put it.

**Q Now, what if people disagree about whether something constitutes a study that really addresses the question at issue?**

A. That happens all the time.

**Q And people in your field and the areas that we're talking about here sometimes have reasonable views about whether something constitutes the type of study that can provide a reasonable scientific basis or not; correct?**

A. Sometimes they do. More often they are unreasonable views, but that's a different issue.

**Q Well, you agree with me just in a very simple fashion that the views that you're**



**ARTHUR L. FRANK, M.D., PH.D.**

**expressing about whether something does or does not have a reasonable scientific basis or whether something is or is not scientifically unreasonable, they're going to be experts in this case who disagree with you; correct?**

A. There's already experts who disagree with me.

**Q Right; we know that.**

A. We know that, so that's a given.

**Q And they are experts that you regard, at least in the case of Dr. Welch, as being a highly qualified expert person in her field, indeed in your field; correct?**

A. You're putting words in my mouth that I didn't use.

**Q Well, I'm just asking you -- that's the whole idea of leading questions, which are permissible for adverse witnesses as you well know. So, yes, I'm putting words in your mouth. I'm asking whether you agree or not.**

A. Well, first of all, I don't know that because I'm not schooled in the law. I have done a fair number of depositions, but, you know --

**Q What's a fair number?**

A. Thousands.
**Q That's an overwhelming number of depositions; right?**
A. People can disagree on that.
**Q Are you going to quibble with me about that or would you just -- that's an easy one. Overwhelming number of depositions.**
A. Compared to what most physicians do, that's an overwhelming number.
**Q It probably sets a record, in fact. Is there any other expert that you know who has testified in depositions as much as you have?**
A. I don't keep track of how many times people --
**Q Are you aware of one?**
A. I've never looked into the issue.
**Q I didn't ask you that. I asked, are you aware of one?**
A. No, I'm not.
**Q Thank you. So, if you go back now to the disagreements that you have with Dr. Welch in this case, you would recognize that she is an expert in your field; correct?**
A. She is someone who is experienced in this





field. Expert, again, is a designation I take by the court.
**Q I've heard that. I don't buy that.**
A. What do you mean? You can buy it or not. She has expertise beyond what most physicians do about this topic.
**Q And on that basis, would you consider her, in your own view, Dr. Frank, to be an expert? I'm just asking for your scientific view of her as an expert?**
A. I don't use the term "expert". I really have segregated that in my mind to what court's do. Does she have a special experience and expertise and do I value what she says? Certainly more than I would for other physicians and in most --
**Q Dr. Frank -- I'm sorry.**
A. And in most ways I have agreed with her enough of an agreement to sign onto a paper that she was the senior author of. That doesn't mean we agree about everything.
**Q The issue is not whether -- I know that, that's where I'm going. Obviously you don't agree with Dr. Welch about everything; right?**





A. Correct.
**Q And no one would expect that you would; right?**
A. I don't know. Some people might.
**Q All right. Mr. Heberling, he agrees with every word that you speak; right?**
MR. HEBERLING: Objection.
THE WITNESS: I doubt that.
MR. HEBERLING: Argumentative.
MR. BERNICK: Well, of course it's argumentative. Cross-examinations are always argumentative, Mr. Heberling.
MR. HEBERLING: Depositions need not be excessively argumentative.
MR. BERNICK: Well, I don't think I was being excessively argumentative.
BY MR. BERNICK:
**Q Dr. Frank, do you consider yourself to be an expert?**
A. No, I do not. I'm someone who has a certain expertise and has spent forty years of his professional career studying the subject of asbestos. I do not call myself an expert.
**Q You've never called yourself an expert in**





**any context outside of court?**
A. No.
**Q Is my statement accurate?**
A. I have never called myself an expert in anything.
**Q Outside of court?**
A. Outside of court, I don't believe so. Not that I can recall.
**Q You are certainly aware that a lot people in lay terms talk about somebody being an expert; correct?**
A. Absolutely.
**Q You also are aware that there are many, many, many, many scientists who from their own point of view as scientists talk about themselves as being experts; correct?**
A. I'm not one of them.
**Q I didn't ask you that.**
A. There are such individuals.
**Q There are many such individuals; correct?**
A. I've never done a study as to how many do that.
**Q You can't make any statement about whether there's a lot of those people out there?**

A. Frankly, most scientists do not call themselves an expert.

**Q Well, in point of fact, there are ways of qualifying as having expertise in given fields scientifically; correct?**

A. Yes.

**Q A, they have an education that's appropriate; right?**

A. True, or board certification or advanced training or series of publications, or whatever.

**Q Right. There are lots and lots of things that scientifically can give rise to the scientific notion that somebody is an expert in a certain field; correct?**

A. Yes.

**Q And based upon those different things, do you consider yourself to be an expert in your field?**

A. I am someone who has a certain expertise and experience and a lot of knowledge, but I would not use the term "expert" to describe myself.

**Q I didn't ask you that.**

A. Others are very likely to call me an expert.

**Q And that's something that's not surprising**





**because there are, in fact, conventions, rules, expectations in the scientific community on the basis of which people refer to one another as being experts or not being experts; fair?**

A. I would generally agree with that statement.

**Q Now, based upon those same conventions of your particular field, do you regard Dr. Welch as being an expert in your field?**

A. Dr. Welch has far more expertise and experience in this area, and if one wants to use a lay term that is commonly used, one could use the term "expert", but it is not one I would choose to use to describe others of my colleagues.

**Q You wouldn't describe any of your colleagues as being experts because you described yourself as being an expert; correct?**

A. That's right.

**Q But I'm saying, if you followed the conventions that scientists in your area use when they refer to somebody as being an expert or not, would you agree that Dr. Welch, following those conventions, is an expert in your field?**

A. If one followed those conventions, it is likely she would be called an expert.





**Q Now, so we have a situation where -- and you would, again following those same conventions, you would be called an expert, too; correct?**

A. I would expect that would be the case.

**Q And would you agree with me, we now have a situation where we have two different scientists, both of whom would be called experts based upon scientific convention who in this particular situation with these particular issues that we have before us disagree about whether something has a reasonable scientific basis; correct?**

A. So it seems.

**Q Now, is there any scientific criteria on the basis of which any well-established convention of science that says that you are right and she is wrong in making these fundamental judgements?**

A. Science doesn't work that way.

**Q So, if we now go to another question, another series of terms that you've used, you said something is reasonable for nonscientific reasons. Do you remember saying that?**

A. I don't specifically recall the context of that. If you put down that I said it, there's probably a context in which I said it. At the





moment, I don't recall that.

**Q But what is the test for something that's reasonable for nonscientific reasons?**

A. I'll go back to my painted car analogy. What is reasonable to different people or different car owners will vary depending on whatever sense they bring to it. Somebody will accept a paint job that somebody else might not.

**Q Well, what's the test? I mean, you just stated that people have different opinions. We know we have different opinions --**

A. The test is whatever people bring to that issue.

**Q So, it's purely subjective?**

A. In some cases it's subjective. On the other hand you could actually go measure as to what percentage of the car was properly painted and if the contract says we will paint your car to within ninety-eight percent of covering all of the surface of the car, then you can do an actual measurement.

**Q Well, there you would have a legal notion, which is what's in the contract and then you would have a scientific methodology that's used to apply**

**it; right?**
A. That would apply in that case.
**Q So, in that case you're talking about something that is reasonable for legal and scientific reasons; correct? So, I'm not talking about that situation. I'm talking about something where, as you put it, something is reasonable or not reasonable for nonscientific reasons what is the test of that?**
A. The test of that would probably lie in the eye of the beholder and who is making the judgement and what the purpose of that might be.
**Q Then you also had a statement and opinions saying something is or is not supported. Do you remember that?**
A. Yes.
**Q What's the test of whether something is or is not supported?**
A. If there is something in the scientific literature that you can point to that's of good scientific quality that is something one can point to say this is a reasonable position to take based upon the scientific evidence.
**Q Is that different from reasonable scientific**



**basis; to simply say something is or is not supported?**
A. It's pretty much the same.
**Q Pretty much the same. So, when you say that something is not supported or is supported, you mean by that that something does or does not have a reasonable scientific basis?**
A. Yes.
**Q So, when you used the words this morning "not supported", that was shorthand for did not have a reasonable scientific basis?**
A. Correct.
**Q Is that correct?**
A. That would be --
MR. HEBERLING: Asked and answered.
THE WITNESS: That would be a way to look at it, yes.
MR. BERNICK: If he answered it once, he can answer it again, Mr. Heberling.
MR. HEBERLING: No. The objection is asked and answered.
BY MR. BERNICK:
**Q Now, this case focuses -- the issues that we have here focus to a large extent on these TDP,**



**Trust Distribution Procedures. Do you remember that?**
A. I do.
**Q In fact, you went through and offered a whole bunch of opinions on trust distribution procedures this morning; correct?**
A. Yes.
**Q Now, is there anything in the science that tells us what is the right standard to use in expressing opinions about trust distribution procedures?**
A. Science doesn't address those issues. Science addresses the issues of science, how they are then utilized in another setting, certainly can lead, apparently is present in this case, to vastly different opinions.
**Q Well, there is nothing in the TDP that says it's the best scientific answer; is there?**
A. It doesn't speak to the quality of science.
**Q Right. And, therefore, when it comes to the TDP itself, there's not in science that you can look to that says this is how a scientist should go about assessing it; is there?**
A. Scientists can't address the procedural



issues of a TDP. The scientist can only address the scientific underpinnings of scientific judgements as they are made part of a TDP.
**Q Well, but, you're assuming that the TDP is purely a scientific document, and we know it's not; right?**
A. I have never assumed that it's a scientific document. It's very much a political and legal document.
**Q So, is there any where that science can tell us, is there any scientific document that says when a scientist assesses a legal, political document this is the right standard to use in assessing it?**
A. If you recall the questions this morning, I made -- can I finish my answer?
**Q Sure.**
A. I made the distinction between those things that were of a scientific nature, which is what I was commenting upon with regard to the science, and the whole legal/political nature of the document is not one that I have any basis to comment upon other than whatever is my personal opinion, which is irrelevant.

Page 126

ARTHUR L. FRANK, M.D., PH.D.

**Q Well, that may well be, but the document you, yourself, have acknowledged was not and is not intended to be a scientific document?**

A. But judgements made that are based upon science should be based upon proper science, those parts of it, otherwise you don't need science at all and a bunch of people can sit in a room and say, all right, we're going to do this for this and this for that and it doesn't matter what the science tells us.

**Q But your opinion about the relationship, the proper relationship, between the TDP and science is an opinion that itself does not have a scientific test for; correct? There's nothing in the field of science that tells you how a scientist should look at this particular document; correct?**

A. I'm not looking at that way, nor do I suspect that anybody should look at it that way, and I'm leaving it to the lawyers to do the legal stuff. But what I was commenting upon is the scientific basis for judgements in the TDP that purportedly are based upon science or to reflect what science can tell us about those issues.

Page 127

ARTHUR L. FRANK, M.D., PH.D.

**Q But the judgements about what is in the TDP are judgements about what to include in the compensation scheme; correct? The TDP is a compensation scheme.**

A. It's a compensation document that one would like to think is based upon --

**Q I didn't ask you that.**

A. Okay. It is a compensation document, and the only reason I am here is that there appears to be some scientific questions or issues with regard to that document, because otherwise you would have some economist sitting here instead of me making judgement about what's fair for people.

**Q Now, to make a scientific judgement about this legal political document --**

A. I'm not making scientific judgements about this document. I'm making scientific judgements about the scientific underpinning of those parts of the document that purportedly are based upon science.

**Q And in making those judgements, are you making those judgements applying the same criteria, the same standards that you would apply in determining whether an opinion published in the**

Page 128

**ARTHUR L. FRANK, M.D., PH.D.**

**peer review article is a good opinion scientifically or a bad decision scientifically?**

A. I'm using the same scientific judgement I would use for that. The political or legal aspects of the document are not what I'm commenting on.

**Q Now, who told you, in offering opinions about the TDP, to apply that same scientific standard that you would ordinarily apply in the field of research? Who told you that?**

A. Nobody told me that. That's what I have chosen to apply. I think science should be based upon what science tells us, otherwise it becomes an arbitrary and capricious experience and document.

**Q I certainly agree that science should do that. Let me ask you another question, which is about the materials that you've reviewed. This is going to be much concrete and tangible. You tend to get excited here at certain point. You look like you're kind of slipping off the edge.**

A. I'm not the one slipping off the edge.

MR. HEBERLING: Objection; argumentative, improper questioning.

Page 129

ARTHUR L. FRANK, M.D., PH.D.

THE WITNESS: I've dealt with a lot of lawyers and --

BY MR. BERNICK:

**Q Oh, I know, thousands of them. How many lawyers have you dealt with, incidentally? It's got to be over a thousand.**

A. Well, sometimes it's a lot of the same ones that show up.

**Q I see. Well, this is the first time and I'm exactly like all those other guys and women. So, materials that you've reviewed, this is a question everybody always asks --**

A. Am I to take that as a statement or fact or opinion?

**Q However you want. I say that with a smile.**

A. Okay; I'll take it the way I want.

**Q Good. So, one of the questions that all the lawyers have asked you, and this will be completely true to form, is questions about materials that you've reviewed. And I know a lot of the materials you have reviewed from your expert reports because they identify those. I want to know about materials that you've reviewed that are not in your expert reports or not**

**referred to in your expert reports.**
A. I have reviewed the scientific literature on the subject of asbestos for forty years. That includes thousands of articles and that's what I bring in reaching my judgements.
**Q Now, I want to ask specifically whether you have reviewed the testimony or expert reports of anybody who testified or offered expert disclosures in the criminal case that was just concluded?**
A. I have seen nothing about that case other than what was on the blog. I've seen no testimony. Obviously some of the people who testified in that I've seen other materials of their's, such as Dr. Whitehouse, but I have seen nothing out of the criminal case.
**Q That's helpful. That folder just got turned over very quickly.**
A. Good.
**Q So, we know that the TDP is part of a compensation scheme. You certainly have that understanding; do you not?**
A. I do.
**Q And do you understand that the TDP is not**





**the individual review, it is a series of criteria that can be satisfied by submitting the right kind of documentation?**
MR. HEBERLING: Objection; misstates the document.
THE WITNESS: So, it seems.
BY MR. BERNICK:
**Q And, again, I think that's correct in any event, but that's certainly your understanding; correct?**
A. It's a document that lays out criteria that, as Mr. Finch and I discussed this morning, allows for individual review of some criteria are not met.
**Q And when we about talk the TDP criteria, can we just have in mind those same things that you looked at with Mr. Finch as the different category of disease and what requires to make a claim for that kind of disease?**
A. We can.
**Q Now, do you understand that those criteria set forth in those TDPs, that part of the TDP, do you understand that the purpose of having that as opposed to the individual review is so that people**





**can get expedited evaluation of their claims and, they hope, expedited payment for their claim; is that your understanding?**
A. No, that is not my understanding.
**Q Well, if everybody had individual review you wouldn't need all the rest of this stuff; right?**
A. It would be an alternate system and personally I happen to think that an individual review would be better and probably quicker.
**Q It may well be, and I don't have an opinion one way or another, God bless us, it's not up to me.**
A. But you just stated that the reason that you put forth for this document was to make it quicker and to get payments to people quicker, and I'm not sure that that, in fact, is the case.
**Q Well, I just asked -- all I, in fact, asked you was your understanding. Do you have an understanding that the reason, the purpose, for having these TDP criteria is so that large volumes of people can get their claims processed without individual review?**
A. I do not understand what the rationale for a TDP is. If you tell me that that is why they are





often constructed, that certainly seems reasonable.
**Q I want you to assume that the purpose of the TDP categories that you've looked at is to be able to establish entitlement to compensation for a large number of people, and on the basis solely of the submission of documentation, certain kinds of documents. I want you to assume that; okay?**
A. Yes.
**Q Now, for that to have any scientific basis, would you agree with me that the TDPs need to identify a pattern of disease that has been recognized and established scientifically?**
A. One would like to think, but I don't think this document does that.
**Q I didn't ask you that. We're going to get to whether it does or not, and I respect that you're going to have different views on that. I'm just asking you if the purpose of the TDP is to handle the large volume of claims without individual review, would you agree with me that the only way that can be done with any scientific basis is if science has identified and established that certain pattern of disease?**

**ARTHUR L. FRANK, M.D., PH.D.**

A. Science doesn't establish anything. People establish things. Scientists establish things. Science doesn't establish things and as we've discussed, science can be seen differently by different people. Now, how you can construct a TDP will very much reflect on the philosophical rationale you want to bring to it such as the possibility that you want to pay people quickly or the possibility that you want to differentially pay people in certain ways?

**Q Again, I don't think we're disagreeing on that. I'm just trying to frame that if the goal is a goal that says we want to determine compensation for a large number of people without individual review, for that to have any scientific basis, science must have identified, scientists must have identified a certain pattern of disease that recurs in a number of people and can be established through objective criteria; correct?**

A. If all you are interested in is any criteria or any science, or whatever the phrase.

**Q Any scientific basis.**

A. Any scientific basis, then I would agree that that is one way to do it. If you want to do



ARTHUR L. FRANK, M.D., PH.D.

it on a basis that most accurately reflects the science, then any scientific basis is not a standard I would like to hold to.

**Q Well, let's take it one step further and go to a question that you indicated. If the purpose of the TDP is to assess compensation for large numbers of people without individual review, would you agree with me that for that TDP to have a reasonable scientific basis science must have studied and determined a certain pattern of disease as occurring repeatedly?**

MR. HEBERLING: Objection; asked and answered twice.

MR. BERNICK: No, it's a different question.

BY MR. BERNICK:

**Q Do you understand the difference now?**

A. It's a difference, and then the only qualifier would be when you used the phrase "reasonable scientific basis" is that your reasonable and my reasonable, my reasonable was the best science and your reasonable, as we discussed, could include not necessarily the best --



ARTHUR L. FRANK, M.D., PH.D.

**Q We'll adopt your standard, to have the best scientific basis if you want to have a compensation scheme that works without individual review and processes large numbers of people, would you agree with me for it to have the best scientific basis that scientist must have established a recurrent pattern of disease that can be identified through objective criteria?**

A. Yes.

**Q Now, if the compensation scheme is to neither overpay nor underpay, this same -- you're going to agree with me about this. This one is going to be an easy one. Would you agree with me that if the compensation scheme without individual review is to neither overpay, that is to not to pay too many people, or underpay, which is to pay too few people, that it must further be tailored to what science says about that disease?**

A. I'm not sure I would agree with that. I think it's not a question of worrying so much about overpayment and underpayment as it is about a certain sense of equity and where you want to set the bar as to how easy it is to get payment or not. The question of what the levels of payment



ARTHUR L. FRANK, M.D., PH.D.

are is a whole other issue that I'm not particularly prepared to discuss. But, no, I'm not sure I would necessarily agree with your statement.

**Q Well, let me rephrase the question, because I thought it was going to be easy, and I still think it's going to be --**

A. No, it's not.

**Q Well, I'm saying I want you to assume that the purpose of the compensation scheme is neither to overpay nor to underpay; that's the purpose, that's what you want to accomplish. Would you agree with me that under those circumstances if the compensation scheme is to have the best scientific basis, it must be tailored to what science has established is recurrent patterns of disease?**

A. If that is your desire, I guess you could say that that would be an easy one, and, yes, I could say I agree with it, but I don't think that's what the compensation scheme should aim to do.

**Q Now, in talking about the categories of disease that we have in the TDP, it's true, is it**

Page 138

ARTHUR L. FRANK, M.D., PH.D.

**not that, that there are different categories, one for mesothelioma, another for lung cancer and the like?**

A. It's self-evident. That's an easy one.

**Q That's an easy one. I'll try to make them all like that.**

A. No, you won't.

**Q You know, you remind me of this very smart and able client that I named Dori Kuchinsky.**

MS. KUCHINSKY: Don't make me take you off mute.

MR. BERNICK: That's why you guys get along so well.

MS. KUCHINSKY: I take that as a compliment, David. Thank you.

MR. BERNICK: It was meant to be a compliment to both of you.

BY MR. BERNICK:

**Q So, you have categories in the TDP and the categories are basically driven, defined by, A, the type of disease and, B, some measure of severity; correct?**

A. So it appears.

**Q Well, but based upon what you went through**

Page 139

ARTHUR L. FRANK, M.D., PH.D.

**this morning, is that your --**

A. That's what the scheme has. It has cancer one type, which is relatively easy and straightforward, and it has another type of cancer that has several levels, it has the third type that pays a different amount of money for cancers that are in some dispute and then when things really get a bit hairy is this question of asbestosis.

**Q Right. But in each of the cases that you've talked about -- well, actually, it's really more in the case of asbestosis, but in each of the cases that you talked about, with the exception of mesothelioma, I think, would you agree with me that categories are driven both by disease type and by severity?**

A. No. Lung cancer is not a question. It's just as severe to have it or not have it, the only difference in severity is if you can be cured of it or not. Obviously for the others, for the nonmalignant diseases, they are driven by severity. I don't know how you have levels of severity of cancer. That's never a good thing to have.

Page 140

ARTHUR L. FRANK, M.D., PH.D.

**Q Fair enough. Now, you are aware that the TDP, many parts of the TDP have been used literally for years; correct?**

A. I gather that is the case and have found it just as inappropriate in other settings as I have in this.

**Q Well, I'm sure that would be true, but I was really getting at a different thing, which is that these TDPs have been used in a variety of bankruptcies for many, many years. Is that your understanding?**

A. That is my understanding.

**Q Is it your understanding that the TDP in this case was revised to include a brand new category?**

A. No.

**Q You weren't aware that the --**

A. I've never looked at an old one, so I don't know if this one is the same or different. So, I'm not aware.

**Q Well, let's get specific then. I'm not going to go back on that. If you weren't aware of it, you weren't aware of it, but let's take a look at what is the TDP. The TDP is Exhibit Eleven, so**

Page 141

ARTHUR L. FRANK, M.D., PH.D.

**if you page through that pile and go to Exhibit Eleven.**

A. I have it.

**Q And on page twenty-six I think we get to the page of interest. We have a category for Severe Asbestosis, Level Roman IV A, and a category for Severe Disabling Pleural Disease, Level IV B. Do you see that?**

A. I do.

**Q Now, severe asbestosis, as it's defined, you've got a bunch of different criteria, but asbestosis is a disease type that is defined in the scientific literature; correct?**

A. It is a type of pneumoconiosis caused by asbestos. The type is pneumoconiosis, the definition is the pneumoconiosis caused by asbestos.

**Q So, when you think about the pneumoconiosis caused by asbestos, is asbestosis, as it is targeted here, I'll just use that loose term, do you refer to that as a disease type or a subtype, or, you know, what is the right way of talking about --**

A. It is a disease.

**Q A disease?**
A. It is a specific, definable disease.
**Q And asbestosis is a specific, definable disease; correct?**
A. Yes.
**Q Now, as asbestosis involving interstitial fibrosis, is that a type of asbestosis or is it a subtype? Again, how do you --**
A. That's where there's some varying opinions in the scientific community. Some people claim that asbestosis is only a disease of the parenchyma of the lung and the term "asbestosis" for those individuals applies to fibrotic changes in the parenchyma of the lung caused by asbestos. There's another school of thought that says that it's either the parenchyma of the lung or the pleura surrounding the lung which becomes fibrotic, and those together are called "asbestosis". And then one can have subtypes, which is parenchymal asbestosis or pleural asbestosis. But it would still be asbestosis. And if you ascribe to the first school, then asbestos applies only to the parenchyma, and there's no subtypes. If you apply to the second



definition, then it's applies to two different types of asbestosis.
**Q But certainly the scientific literature recognizes that there is a distinct diagnostic entity; that is, parenchymal asbestosis?**
A. Yes.
**Q I mean, when I use the term "distinct diagnostic entity", is there a better word to use. And this is purely nomenclature so that the deposition can go more smoothly.**
A. That's as good as anything.
**Q Okay. Now, would you agree with me severe asbestosis, as it appears in the TDP level Roman IV A is focused on, I'm not asking whether it does a great job or a bad job, is focused on parenchymal asbestosis?**
A. That's how it's defined in this TDP.
**Q So the answer is "yes"?**
A. Yes.
**Q Whereas severe disabling pleural disease, Roman IV B, is focused on pleural asbestosis or pleural disease not involving fibrosis of the parenchyma?**
A. Yes.



**Q And it is also defined, not only by that diagnostic entity, pleural disease not involving the parenchyma, but it has to be a severely disabling disease; right?**
A. That's what it says.
**Q So, the purpose of this TDP on its face is to focus not on parenchymal asbestosis and not on pleural disease that's short of severely disabling, but to focus specifically on pleural disease that is severely disabling; right?**
A. That question didn't make sense. The beginning didn't match the rest of it.
**Q I'll rephrase it.**
A. Please.
**Q We can see that the disease, the diagnostic entity that's targeted by Level Roman IV B is different from the diagnostic entity that's targeted by Level IV A?**
A. Yes, I agreed to that already.
**Q Right. And we can also see that Level IV B is differentiated from Level III by virtue of it's being focused on those cases that are severely disabling; correct?**
A. That's what the title says.



**Q Now, if we went to the scientific literature, we would find that parenchymal asbestosis has been identified as a diagnostic entity going back for decades; correct?**
A. Yes.
**Q Is it also true that if we went to the scientific literature, pleural disease has been defined as a diagnostic entity going back for many, many years in the scientific literature?**
A. It goes back as far as the parenchymal disease, the original description of pneumoconiosis was 1867 by a German pathologist by the name of Zenker, and he said that a pneumoconiosis, and he was the one that coined the term, dust disease of the lung, was a disease that affected both the parenchyma and the pleura of the lung.
**Q Fascinating. In the scientific literature going back for a very long time, there was a diagnostic entity related to asbestos exposure called diffuse pleural thickening; correct?**
A. I don't know what you mean by "a long time".
**Q Back to at least the early 1970's.**
A. That's not a long time. There's a lot

longer and older literature.
**Q Okay. Okay.**
A. You know, that's why I was confused. There's a lot longer and older literature than that.
**Q Dori was a flower child back at that point in time. No, Dori is much to young to have been a flower child, but you were a flower child; right?**
A. Probably. On a given day, yes.
**Q It's considered fashionable then and now, but back in -- I'll rephrase my question. Is it true that the scientific literature defined a diagnostic entity called diffuse pleural thickening at least as of the 1970's and without relationship to Libby, Montana?**
A. Yes.
**Q And would you agree with me by the 1970's it was a well-established diagnostic entity?**
A. I have not researched or studied the specific use of that term, but certainly pleural disease caused by asbestos, by whatever name it went, had various descriptions and that would have been one characterization of the pleural disease you got from asbestos.



**Q Well, for purposes of this case or at any other time, have you actually gone back and done a literature search to determine what the literature has to say about diffuse pleural thickening?**
A. Not that term. I have studied the issue of what one should call pleural disease caused by asbestos, and descriptive changes one could say include both what is now called diffuse pleural thickening or circumscribed or discrete pleural thickening or pleural plaquing. But the older literature, and I have gone back and read that, did not make that specific distinction. When that distinction was first made, I don't know, but it was certainly relatively recently.
**Q That distinction is well-recognized in the scientific literature today; that is, the distinction between diffuse pleural thickening and circumscribed pleural plaques; correct?**
A. It is recognized as being different, but the definition of what accounts for either of those is not necessarily consistent.
**Q We'll get to that definition in a minute. Would you agree with me that today diffuse pleural thickening is recognized as a distinct diagnostic**



**entity in the scientific literature?**
A. Distinct from what?
**Q Distinct from other forms of pleural disease?**
A. Yes.
**Q And it is diffuse pleural thickening that is the target or focal point for Level IV B; correct?**
A. Yes.
**Q Now, let me ask you a little bit about diffuse pleural thickening, then. Diffuse pleural thickening can involve, I think you've made mention, in fact, that the pleura actually has different parts to it anatomically?**
A. I have not. We haven't discussed that, but I would if so asked. There's the visceral pleura and the parietal pleura.
**Q I thought you had referred to that for sure, but --**
A. No, I have not.
**Q I'm probably confusing you with a less able witness that I have asked the same questions of.**
A. Or many of the other thousand doctors that you have taken depositions from.
**Q No, to the contrary. I have not taken a**



**thousand depositions of doctors. I don't think I've taken a thousand depositions. I'm not nearly as experienced in that area as you are. So, the parietal pleura is what portion of the pleura?**
A. That that would line the inside of the chest wall.
**Q And the visceral pleura is what part of the pleura?**
A. The pleura overlying the lung parenchyma.
**Q And those are distinct anatomical features of the human body; correct?**
A. Yes.
**Q And is it true that the literature distinguishes, scientific literature distinguishes diffuse pleural thickening of the parietal pleura from diffuse pleural thickening that also involves the visceral pleura; correct?**
A. I have not studied that particular issue. I'm sure they have been discussed in separate terms. I recall reading some people talk about the parietal pleura and some about the visceral pleura, but I have not studied the use of terminology with regard to that.
**Q Well, is there a difference between diffuse**

**pleural thickening involving the parietal pleura only versus just diffuse pleural thickening involving both the parietal pleura and the visceral pleura?**

A. There are some things that are the same and there are some things that are different. What's the same is that they are caused by the cell type laying down the same collagenous material. What's different is they are anatomically in two different places.

**Q Well, but they are not only anatomically in two different places, there are different types of diffuse pleural thickening; aren't they?**

A. No, it's the same collagen being laying down by fibroblast. It's the same in that sense, it's just that it's in different places. There is nothing structurally different about the thickening in the parietal or visceral pleuras.

**Q Are you testifying that as an expert based upon your actual review of the scientific literature?**

A. I'm testifying to the extent that I have not studied the terminology. I'm not a pathologist. I'm not an anatomist. That would be my





understanding from what I've read.

**Q I am just asking kind of pretty candidly, have you actually focused on what the literature has to say --**

A. I've already said no. I'm sorry.

**Q What the literature has to say about the differences, if any, between diffuse pleural thickening involving the parietal pleura only versus diffuse pleural thickening involving also the visceral pleura?**

A. I have not focused on that in my review of the scientific literature.

**Q Thank you. Now, are you familiar with the difference between -- are you familiar that certain kinds of diffuse pleural thickening involved overlapping pleural plaques?**

A. I am not sure what you mean by overlapping pleural plaques.

**Q I guess, then, that you wouldn't be familiar with diffuse pleural thickening involving overlapping pleural plaques?**

A. I guess not. I don't understand the term. I've never seen the term "overlapping pleural plaques".





**Q Well, are you familiar that diffuse pleural thickening actually can involve different presentations of the tissue?**

A. Yes.

**Q And pleural plaques are the distinct appearance of pleural tissue; correct?**

A. Yes, and they may or may not be calcified.

**Q And they may or may not be calcified. But do you know whether there's a certain kind of diffuse pleural thickening that involves the appearance of overlapping pleural plaques?**

A. I'm not aware. As I said, I've never seen that term.

**Q Do pleural plaques involve the parietal pleura, the visceral pleura or both?**

A. It can be either.

**Q I'm sorry?**

A. It can be either or both.

**Q Well, is there any difference in frequency with which --**

A. I have not studied that. I don't know.

**Q I'm sorry; let me just finish so that the record is clear. Do you know, are you aware of the frequency with which pleural plaques can**





**involve the parietal pleura or the visceral pleura?**

A. I do not know.

**Q Are you familiar with the term blunting of the costophrenic angle?**

A. Yes.

**Q What is blunting of the costophrenic angle?**

A. It's when fibrotic changes occur in not that part of the sulcus where the diaphragm and the side wall of the chest meet.

**Q Does the pleura extend down into the costophrenic angle?**

A. Yes.

**Q So, when we talk about blunting of the costophrenic angle, is that blunting of the pleura at the costophrenic angle?**

A. It can be, or it can be a collection of fluid.

**Q Are you familiar with what the literature says about the blunting of the costophrenic angle in connection with diffuse pleural thickening? Do you understand the --**

A. Not really. One of the definitions of diffuse pleural thickening requires a blunting of

the angle with fibrotic change. Others do not take it as a requirement.

**Q But if you examine the literature to determine either the -- first of all, if you examine the literature to determine the origin of diffuse pleural thickening where there is a blunting of the costophrenic angle?**

A. I don't understand the question. What do you mean by "origin". What the cause is?

**Q Yes.**

A. There are many causes of it.

**Q Many causes of diffuse pleural thickening where there was a blunting of the costophrenic angle?**

A. There can be.

**Q Well, tell me what all the different causes are.**

A. Obviously, asbestos is one, but you can have infections in the chest that give you a blunted angle with pleural thickening, that would tend to be unilateral. Theoretically, trauma can do it. Benign asbestotic pleural effusions, the residue of that can you give you that finding.

**Q Well, let's focus on diffuse pleural**





**thickening involving blunting of the costophrenic angle associated with asbestos. I'm assuming that we have asbestos exposure and I'm assuming that we have an association with an asbestos exposure.**

A. Then you have two possibilities. You've got the fibrotic changes or you've got the residue of a benign asbestotic pleural effusion.

**Q So, to be clear, where you have blunting of the costophrenic angle and diffuse pleural thickening, the cause of the diffuse pleural thickening is either the residue of benign pleural effusion or fibrosis?**

A. Yes. Well, they're both fibrosis, it's just fibrosis without a precedent benign asbestotic pleural effusion.

**Q And if it's fibrosis without a precedent benign pleural effusion, where does the fibrosis come from?**

A. From the irritation of asbestos of the pleura.

**Q Of the pleura or of the parenchyma? Are you saying that you can get blunting of the costophrenic angle, pleural thickening involving blunting of the costophrenic angle --**





A. From changes in the pleura, yes.

**Q Solely from changes of -- let me be much more precise so that we don't go back and forth on this. I want to make sure we're clear. Where you have blunting of the costophrenic angle and diffuse pleural thickening, is it your testimony that that can be caused without either fibrosis of the parenchyma or the residue from a benign pleural effusion?**

A. I haven't studied to know if it can occur in the absence of fibrosis in the parenchyma, so I don't know about that.

**Q So, when you talked about fibrosis, you were talking as opposed to a benign pleural effusion, you were talking as a second cause, you were talking about fibrosis emanating from the parenchyma; correct?**

A. No, pleura.

**Q Well, but fibrosis emanating from the pleura in the absence of interstitial fibrosis and in the absence of benign pleura effusion, I thought you just said you hadn't studied that?**

A. No, it's the other way around. I haven't studied the parenchyma. You're --





**Q Oh, I see.**

A. You're reversing it now.

**Q So, you're saying that there are two causes that you are aware of?**

A. You can have scarring of the pleura or you can have residue of benign asbestotic pleural effusion. I do no know if you will bet a blunted costophrenic angle. I imagine you can if you get severe parenchymal fibrosis and subpleural fibrosis, but I haven't studied that issue.

**Q Well, where you don't have the benign pleural effusion and the residue from that --**

A. Yes.

**Q -- and you still have blunting of the costophrenic angle, are you saying that it comes from the plaquing process?**

A. You're throwing in another term now. What is the plaquing process?

**Q Well, the fibrotic process induced by the presence of asbestos fibers.**

A. But it's not the plaquing process, it's a fibrotic process, and plaques are plaques and obviously you're using diffuse pleural thickening as a different entity, so that's why I didn't want

to respond to the plaquing process, not knowing what you meant by that.

**Q Well, I could be precise. First of all, are you aware of any scientific literature that says that the fibrotic process giving rise to plaques can cause blunting of the costophrenic angle of the pleura?**

A. I don't recall what's in the literature, but I've certainly seen such cases clinically.

**Q So, without any evidence of benign pleural effusion, you've seen cases -- are these personal cases you've seen not reported in the literature or you just don't know?**

A. Well, certainly it's cases I've seen. We've seen all kinds of things at Sinai.

**Q Well, I'm talking about very specific --**

A. You're being very specific, and I will tell you that if you're asking me to give answers about the specificity of this particular entity and its pathologic and anatomic roots, this is not a subject that I have particularly studied. This is the second or third time I've said this now. So, I'm giving you the answer based on my experience. But if you're asking me about the scientific



literature, I do not recall what the scientific literature says specifically about that subject.

**Q And just to be clear, that subject is the cause of diffuse pleural thickening involving blunting of the costophrenic angle?**

A. In the absence of a benign asbestotic pleural effusion; correct.

**Q Have you looked at the literature to see, or do you know, whether the confluence of pleural plaques can affect the visceral pleura?**

A. I don't understand the phrase "the confluence of pleural plaques". You asked me about overlapping plaques. Now you're asking me about confluence of plaques. Those are not terms I'm familiar with.

**Q Is it true that not all diffuse pleural thickening is associated with severe impairment?**

A. The simple answer is yes, and the simple answer beyond that is there is very poor correlation with radiologic appearance and pulmonary function, if you want to use the term "severe" or "disabling" in terms of someone's pulmonary function status.

**Q But you would agree with me, to the general**



**proposition, that not all diffuse pleural thickening is associated with severe impairment?**

A. And conversely, what would be considered very mild or minimal kinds of disease can be associated with severe disabling changes, none of which is reflected here in the document.

**Q I didn't ask you about what was reflected in the document. We're going to get to the document, let me assure you. I'm just trying to find out about the science first.**

A. Well, the science is, what you said is correct and the converse is correct.

**Q Is it also true that, I'm assuming that it is by virtue of your prior answer, that the relationship between diffuse pleural thickening and impairment has been studied by scientists?**

A. Mr. Finch and I reviewed the Lillis article, for example, which studied that very question.

**Q And Lillis is not alone; correct? There are other people that have done research on the same subject?**

A. Yes.

**Q Have you done a review of the literature to study the different studies or different articles**



**that have been published on the relationship between diffuse pleural thickening and impairment?**

A. Not specifically, no.

**Q Is it true that studying that relationship is a complicated process?**

A. Studying most relationships in science is a complicated process, and this one is, too.

**Q And the complications that are involved in determining the relationship between diffuse pleural thickening and impairment include the fact that there are other causes of lung impairment; right?**

A. There's many causes of lung impairment.

**Q Including smoking, obviously?**

A. Yes.

**Q And that if you want to look at diffuse pleural thickening in particular, diffuse pleural thickening is not the only asbestos-related disease that can impair the functioning of the lung; correct?**

A. Correct.

**Q Obviously, you have parenchymal fibrosis as well?**

A. Yes.

**Q Is the research also complicated by the fact that you need to have reliable radiographic readings?**
A. I'm not sure I understand the question. I mean, any time you're going to do a scientific study you need to have reliable assessment of what the radiographs look like.
**Q Right. And what I'm really kind of getting at, isn't it true that when it comes to diffuse pleural thickening in particular that quality of the radiographic assessments has not always been very strong; correct?**
A. The quality of radiograph assessments for asbestos disease in general has not always been very strong.
**Q You're right. I deserve that. Is it also true that diffuse pleural thickening is actually more rare than other forms of asbestosis?**
A. Yes.
**Q Now --**
A. It is less common.
**Q Less common.**
A. Or more rare.
**Q Isn't it true that there is no scientific**





**literature, none, demonstrating that diffuse pleural thickening involving the parietal pleura alone is associated with severe lung impairment?**
A. I have never studied that. I do not know one way or the other.
**Q Did you study the McCloud paper?**
A. I have.
**Q Well, are you familiar with it today so you can speak to it as an expert?**
A. If you have a copy of it, it will refresh my memory.
**Q I'm just asking do you know what McCloud studied?**
A. He was looking at -- I forget the details of it, so I would rather have a copy to look at before I comment.
**Q Well, what studies do you know about the relationship between diffuse pleural thickening and severe impairment, that is to say --**
A. I'm not sure studies look at -- no study that I'm aware of looked at the level -- was designed to study only one level of impairment. The Lillis paper was not designed to study just severe impairment.





**Q I understand that, but certainly --**
A. I'm not aware of any paper that was designed to look at just severe impairment. That was the nature of the question.
**Q Then I'll be clearer about my question. Are you aware of any studies that have included the assessment of whether diffuse pleural thickening results in severe impairment or is associated with it?**
A. I'm sure I've read things that says that, yes, they can be associated. I can't give you the citations for it at the moment.
**Q I just want the science. Based upon the scientific literature, under what --**
A. Well, there's another problem that we have, and that is I don't know what the term "severe" means to you. We have one set of document -- or we have a document here that gives some definition, but I don't know what "severe" is as you used the term.
**Q Well, you know that there could be significant reductions in lung function without it being severe; correct?**
A. It's an arbitrary cutoff as to what you say





is mild, moderate or severe. I mean, it's like people asking me is it a moderate or severe or heavy smoking history. It's all in the eyes of the beholder. Until you have a working definition --
**Q I'm going to give you one. Are you familiar that PFD, pulmonary function test scores, have with them a range of normal, that is that in interpreting pulmonary function tests there are standards or guidelines for what the range of normal is?**
A. Yes.
**Q And I'll just ask you, are you aware of any science which demonstrates that diffuse pleural thickening can be associated with a diminution in lung function such that is below normal range?**
A. Yes.
**Q Tell me what science says what are the conditions under which diffuse pleural thickening can result in a diminution of lung function below the range of normal?**
A. I'm not sure I understand the question.
**Q Well, if there are scientists that are examining -- I'll be clearer. If there are**

**ARTHUR L. FRANK, M.D., PH.D.**

**scientists who are examining the relationship between diffuse pleural thickening on the one hand and impairment on the other --**

A. Right.

**Q I'm just asking, what does the scientific literature say about the circumstances under which diffuse pleural thickening is associated with a diminution of lung function below normal limits?**

MR. HEBERLING: Objection; unclear as to what "circumstances" means.

THE WITNESS: That's exactly right. I don't know what you mean by "circumstances". Some patients with the radiologic findings will have normal pulmonary function, some will have a mild diminution of function and some will have a significant diminution of function.

BY MR. BERNICK:

**Q And tell me what the literature says about the circumstances under which -- the conditions under which diffuse pleural thickening is found to be associated with an impairment such that lung function drops below normal limits. What are properties of --**

A. I don't know that there are some that are



ARTHUR L. FRANK, M.D., PH.D.

cited in the literature, and if they are, I'm not familiar with them.

**Q Let me just be clear. Is it completely arbitrary and unpredictable whether diffuse pleural thickening will, in fact, be associated with a significant drop in lung function, or have you just not looked at this in the literature?**

A. I have not looked at it in the literature. I've looked at other issues of a similar nature. It is not exactly arbitrary in terms of what, let's say, the degree of parenchymal change.

There is some evidence that the higher the radiographic score, the more severe pulmonary function abnormalities will be in groups. But for any individual, you can have a mildly abnormal x-ray with severe pulmonary function abnormality and for others you can have a significantly high score in terms of parenchymal change with perfectly normal pulmonary function. So, in that sense it is very arbitrary. It is not predictable for any individual. For groups, as a group, the higher the radiographic score the more likely one will have a significant diminution of pulmonary function.



ARTHUR L. FRANK, M.D., PH.D.

**Q So, with that statement, which I appreciate, when we're talking about interstitial fibrosis or would be picked up by asbestosis, what is it Roman IV A, when we're talking about that, science says that as groups people who have the higher levels of fibrosis on radiographic reading tend to have more diminished lung function; is that fair?**

A. Yes.

**Q In the same fashion, can you tell me what science has to say about when diffuse pleural thickening is associated with lost of lung function?**

A. I cannot. I have not studied that.

**Q Do you ever get blunting of the costophrenic angle in the pleura where the fibrosis is only parietal?**

A. I don't know.

**Q Now, we started out -- if we were to go through the criteria in this TDP Roman IV B, we see that there are requirements regarding the extent and thickness of the pleura; right?**

A. Yes.

**Q There are criteria involving blunting of the costophrenic angle; correct?**



**ARTHUR L. FRANK, M.D., PH.D.**

A. Well, it is assumed under Dr. Welch's definition. She has adopted, I believe, the ATS document and the interpretation that says that blunting is required.

MR. HEBERLING: David, if you are going in to a new area --

MR. BERNICK: No, I just want to close this out.

MR. HEBERLING: You know, it's 12:30. It might be time for lunch.

MR. BERNICK: I'm going to close this out and that's fine. I will be a few minutes.

MR. HEBERLING: So, you'll be done with the deposition?

MR. BERNICK: No, we'll just take a lunch break. I would like to be able to tell you yes, but I can't tell you that. I know I'm going on and on, but I want to get out of here, too, so.

BY MR. BERNICK:

**Q So, if we go to the TDP for Roman IV B, we can see, I think just to get us back on the same page, there are criteria for the extent and**

**thickness of the pleura and there's also an assumption of blunting of the costophrenic angle; correct?**
A. It doesn't speak to it here, but that would be my understanding.
**Q And, again, Roman IV B is specific to severe impairment, is it not, as measured in the way that it indicates?**
A. Yes. That is this definition of "severe impairment".
**Q Okay.**
A. And it has certain requirements.
**Q And, again, would the answers to the questions here be the same as what you said previously, which is you have not studied what science has to say about the relationship, if any, between the extent and thickness of the pleura and severity of impairment of lung function; have you?**
A. I have not, nor am I aware that there is a need to have any particular extent or width.
**Q And would the same thing be true about blunting of the costophrenic angle; have you made a study of what the scientific literature says about the relationship between blunting of the**



**costophrenic angle and degree of impairment?**
A. Well, to the extent that there is presence of a blunted costophrenic angle, the impairment seems to be greater in groups of such individuals compared to groups of such individuals with pleura plaquing but without the blunted angle.
**Q But have you actually studied the literature on that subject?**
A. Well, Lillis talks to that subject.
**Q Well, that one article.**
A. And there's McCloud, there's another one, I think. I just don't have the recollection of those articles as well.
**Q Well, is it true that blunting of the costophrenic angle is a good marker for diminution of lung function; that is to say, that often diminution of lung function is associated with blunting of the costophrenic angle and, conversely, blunting of the costophrenic angle is often associated with loss of lung function?**
A. For groups of individuals, it is a marker that there is a correlation, but for any given individual it may not hold.
**Q And you just don't know whether the same is**



**true with regard to extent and thickness?**
A. I'm not aware that there is data that would speak to that.
**Q Is it correct, then, that if you have a TDP that is designed to capture large numbers of people being processed on the basis of objective data as groups of people, wouldn't it make sense if you're trying to pick up severe impairment from diffuse pleural thickening, wouldn't it make sense to include a requirement of blunting of the costophrenic angle?**
A. It depends on -- you know, I don't understand the question.
**Q I'll rephrase it.**
A. It's got a problem in there. You've got a severe problem with the question.
**Q So, if we have a process where the TDP portion of the process is designed to process large groups of people on the basis of objective findings and without individual review, and it also includes the part where people who fail those criteria can still get individual review, doesn't it make sense to have, as part of the TDP review, a requirement for blunting of the costophrenic**



**angle if you want to pick up severe impairment?**
A. Not especially. I think the judgement should be what the pulmonary function -- severe is a pulmonary function judgement, not a radiologic judgement. So, if your desire is to compensate people based upon the severity of their disease clinically, which is not a radiologic diagnosis, but a physiologic diagnosis, then you would use pulmonary function testing and you would use DLCO and it wouldn't matter what the radiographic changes are.
**Q But you only want to compensate people who have --**
A. You're telling me who I want to compensate?
**Q No, no?**
A. If one wants to compensate.
**Q If one wants to compensate people who have the severe impairment, however it might be measured, the severe impairment from the diffuse pleural thickening, not from any other source, but from the diffuse pleural thickening, wouldn't it be appropriate, in light of the science on costophrenic angle blunting, to include that as a requirement?**

A. It depends on what your definition -- first of all, it's the same problem you had with the last question that I said you a problem with. It depends on what your definition of diffuse pleural thickening is. If you use Dr. Welch's definition of diffuse pleural thickening, you don't have to use the idea of the presence or absence of a blunted angle, because by definition, it can't be diffuse pleural thickening unless there's a blunted angle.

**Q Well, I'm saying -- I understand it and I want to get very specific and clear so you're okay with at least the question. You're smiling like you don't believe me when I say that, but be that as it may, I'm going to ask you the question a different way. The goal is to have -- I want you to assume that the goal is to have groups of people processed in a way that is reflective of what the scientific literature says about diffuse pleural thickening. I want you to assume that. I further want you to assume that you only want to capture people who have severe pulmonary impairment, however that might be measured, and have that impairment from no cause other than the**





**diffuse pleural thickening, it's the only cause. That's what you want to pick up. And if people aren't picked up, then they can go through individual review, but you want to process volumes of people. Are you aware of the scientific literature identifying any other marker of diffuse pleural thickening that is associated with lung function impairment other than blunting of the costophrenic angle?**

MR. HEBERLING: Objection; compound, vague.

THE WITNESS: It's a self-fulfilling question.

BY MR. BERNICK:

**Q Well, I'll begin with the end. Are you aware of anything in the literature that is a marker for a linkage between diffuse pleural thickening and impairment of lung function other than blunting of the costophrenic angle?**

A. It goes back to the question of how do you define diffuse pleural thickening?

**Q Diffuse pleural thickening defined to include both blunting of the costophrenic angle and cases where it's not there.**





A. Okay. So, that would not be using the definition according to the 2000 revision of the ILO Classification.

**Q First of all, I'll put out the question. You're now going to target for volume treatment people who have diffuse pleural thickening with or without costophrenic angle blunting, you want to target them and you want to use the scientific literature to figure out of those people who have diffuse pleural thickening and a significant diminution of lung function and which ones of them is the diminution of lung function most clearly caused by the diffuse pleural thickening. That's what you want to do.**

A. Yes.

**Q Isn't it true that the only marker or requirement the literature gives you in order to differentiate those people who are severely impaired in association with diffuse pleural thickening, is blunting of the costophrenic angle?**

MR. HEBERLING: Objection; compound and vague.

THE WITNESS: It's irrelevant. If you've got somebody with diffuse pleural





thickening, even without a blunted angle and they have severe diminution of the pulmonary function test and you have determined that they had exposure to asbestos and there is no other explanation for their --

BY MR. BERNICK:

**Q I didn't say no other explanation. That's the whole point --**

MR. HEBERLING: Objection. Let him finish his answer. One question at a time.

THE WITNESS: The finding of the blunted angle doesn't mean that it was caused by asbestos. You still need the history of exposure, which is part of the criteria, but whatever. The presence or absence of the blunted angle becomes irrelevant.

If you've got the pulmonary function data and you have a disease that you've ascribed to asbestos, with or without the blunted angle, you ought to be able to make the determination. If you want to be clearer or if you want to -- this whole issue, not just regarding IV B, but any of these, becomes a philosophical issue. Do you want to make it, as

you put it, quick and simple and, you know, maximizing the number of people you put through, or do you want to set up so many barriers that it makes it hard for people to get through this? And where you set that, you know, is a determination that ought to be based on science, but is obviously, to me anyway, based upon other issues with regard to this whole document --

**Q Let's go back to --**

A. -- because it's irrelevant with regard to the specific issue if you have a blunted angle or not if you have diminished pulmonary function and you have pleural disease caused by asbestos.

**Q Let's be clear, because I don't think that's consistent with what you've already told us?**

MR. HEBERLING: David, let me advise you, he gets up really early in the morning and usually likes to each lunch before noon.

MR. BERNICK: We'll finish up here. If the Witness wants to take a break, we'll take a break. I want to take a break soon, too, but I want to finish up this line of examination before the skeen is lost.





BY MR. BERNICK:

**Q If you have somebody who has significant impairment of lung function measured by whatever test you want to pick --**

A. Well, the ones I want to pick aren't here.

**Q Well, I didn't ask you that. I said by whatever ones you wanted to pick, and you wanted to know the likelihood -- and they had diffuse pleural thickening with or without a costophrenic angle, they have diffuse pleural thickening --**

A. Right, I understand.

**Q And you say, I want to go to the scientific literature and determined if there is any way to find out whether their diffuse pleural thickening is caused by -- or causes the diminution of lung function, isn't it true that the only factor that the literature tells us makes it more likely that diffuse pleural thickening is the cause of the diminution of lung function is blunting of the costophrenic angle?**

A. It depends on what level you want to set your assurance at.

**Q I understand that.**

A. If you're looking for an additional factor,





that would be an additional factor you could use. You could also change where you set the numbers for your pulmonary function. You can set them, like Social Security Disability does, so low that the likelihood is you're going to be dead within a year before they're going to pay you disability, you can set it wherever you want and you can require or not require more or less proof to make you feel more or less comfortable. Clearly given your construct if you want to make it more different and to be more sure under whatever construct you want to be more sure, which is also a way of saying you're less likely to pay people, so I don't see how it cuts down on individual review or getting more people through the system, then you would adopt the idea of using the costophrenic angle as one additional information that makes it more likely that their pulmonary function is, in fact, related to their pleural thickening.

**Q Would you agree with me that there is a reasonable scientific basis for using blunting of the costophrenic angle as a criteria if the goal is to make it more certain that a group of**





**people's diminution of lung function is, in fact, attributable to diffuse pleural thickening?**

A. More certain than what? Than what else?

**Q Than without using it, that the inclusion of --**

A. I don't think so. It's a question of more or less likely to be due to that cause or some other cause.

**Q That's what I'm saying.**

A. Diffuse pleural thickening with or without a blunted angle, you want to be able to determine in that case, especially if you're requiring bilateral changes, that it's caused by asbestos. So, the addition of the blunted angle or not should make no difference. You've already --

**Q Should?**

A. It doesn't make any --

**Q Well, that's where we're going.**

MR. HEBERLING: Objection. Let him finish his answer.

THE WITNESS: It's a question of -- you can set up a hierarchy and say you have to meet three of these or four of these or five of these or six of these. The higher the number of

things you want to meet before you feel comfortable in paying somebody money, then that would be something that you would include.

If you actually want to use the idea that you want to be equitable to people and pay people and get them through the system quickly and not require a lot of review, it shouldn't matter if there's blunted angles or not, you're using a lower level of proof, which should still be adequate if it is believed that it was caused by asbestos with or without the blunting. But if you wanted to make it more different, than you can, in fact, can add the blunting in.

**Q Fair enough. Let's adopt your rue brick, but use -- you have the business about how you want to make it more different or make it harder and we'll let the court decide what the appropriate answer to that is or whether that's even relevant. I'm just asking about the science. And there's a difference between -- I'm going to focus on between making something harder on the one hand and then on the other making the number of people narrower, but based upon scientific data**





**and study. So, it's not just arbitrary, the science tells you, yes, if you do that you make it more likely that the diminution in function is, in fact, caused by the disease that you're trying to compensate for. So, having said all that, I'll put a question to you.**

A. Okay.

**Q We want to compensate people who have both a severe diminution in lung function and diffuse pleural thickening, and the two are causally related; that is, the diminution of lung function is caused by diffuse pleural thickening. I want you to assume that's what the goal is of the category. And now we want to say, well, what can we do to make it more certain scientifically that the two things are tied together, the diffuse pleural thickening and the loss of lung function? That's the question on the table. And what I'm asking you is, isn't it true that there is science, that science says, that blunting of the costophrenic angle, if it's present, makes it more likely that a severe loss in lung function was, in fact, caused by diffuse pleural thickening?**

A. It would apply to groups of people, it would





not apply to any given individual.

**Q Subject to that, is the answer to my question "yes"?**

A. It is a piece of science that makes you more certain that a group of individuals has their disease caused by asbestos, but it would not apply to a particular individual.

**Q And is that also true with respect to bilateral as opposed to unilateral diffuse pleural thickening?**

A. Yes.

**Q Now, in light of your Counsel's remark, I want to close this up by just talking about lung function briefly, and then we'll take the break. Lung function, under this TDP, this category, lung function is measured by forced vital capacity results; correct?**

A. Yes.

**Q And it's not measured by DLCO; correct?**

A. Correct.

**Q Now, is it true that, again, if you're processing large groups of people and you want to know do they have a severe loss of lung function, science says that there's a reasonable basis for**





**measuring their severe loss of lung function by using forced vital capacity results?**

A. That is certainly one way you can do that measurement, but it doesn't exclude the possibility of using other measurements as well.

**Q Again, I would accept that answer, and I would then want to go to DLCO in particular. DLCO is another way of measuring loss of lung function; correct?**

A. Correct, one that is not as capable of being manipulated by the individual.

**Q Well --**

A. It is more objective than the subjective nature of PFTs.

**Q But results from DLCO, that is when you have diminished DLCO, there can be many causes of diminished DLCO that are not specific to asbestos; correct?**

A. Yes.

**Q Now, with forced vital capacity results, you're able to differentiate impairment due to restriction from impairment due to obstruction; correct?**

A. Yes.

Page 186

ARTHUR L. FRANK, M.D., PH.D.

**Q In the case of diffuse pleural thickening, isn't it correct, absolutely correct under the science, that the impairment associated with diffuse pleural thickening is restrictive and not obstructive?**

A. I do not know. I know you can get restrictive changes, but you can also get obstructive changes following exposure to asbestos. I do not know if you will find that with diffuse pleural thickening or if you require parenchymal disease.

**Q Very fair. If it is the case that science says that the impairment associated with diffuse pleural thickening is restrictive and not obstructive, isn't it true that forced vital capacity will enable you to determine whether lung function impairment is associated with diffuse pleural thickening or something else?**

A. Yes.

**Q DLCO can't tell you that; correct?**

A. Can't tell you if it's related to -- well --

**Q It can't tell you whether the lung function impairment is either restrictive or obstructive; correct?**

Page 187

**ARTHUR L. FRANK, M.D., PH.D.**

A. But you have other pieces of information that will help you decide that it's not an isolated finding. If you have -- if you do pulmonary function testing, you will know if somebody has obstructive disease. If they have a chest x-ray, you'll know if they have severe emphysema which would reduce DLCO because it had --

**Q True enough.**

A. If I can just finish. If you're doing it only in isolation, it is not as good as a single isolated test, but if you're doing it as a battery of assessments, knowing the other factors such as what the chest x-rays looks like and what the PFTs look like, DLCO may, in fact, be a better measurement.

**Q But we're now talking about volume processing of claims without doctors doing -- I'm sorry -- without doctors doing, you know, "B" Reads as part of the claims qualification process, so if you wanted --**

A. But I believe it does require a "B" Read, because if you're having a criteria that requires an ILO reading, I believe it is required to be

Page 188

ARTHUR L. FRANK, M.D., PH.D.

done by people of a certain -- probably a "B" Reader.

**Q But I'm saying, by the time the documentation comes in to be processed, no one else is looking at x-rays anymore, it's just what's recorded on the piece of paper. So, if all that you know from the piece of paper is DLCO, you can't tell -- let me be more clear about this. From forced vital capacity you can tell whether the lung function impairment is obstructive or restrictive. We've established that; correct?**

A. But you can also have -- it doesn't speak to that here. It's not asking anybody to look at the FEV1, for example. You can sometimes have a mixed picture, and sometimes your FVC can be diminished because you have --

**Q There's a ratio requirement.**

A. Well, it's a ration requirement, but --

MR. HEBERLING: Let him finish.

THE WITNESS: -- but you could have a severe obstructive disease, your FVC will go down, so it would look like a restrictive process, but it's really secondary to an obstructive process.

Page 189

ARTHUR L. FRANK, M.D., PH.D.

BY MR. BERNICK:

**Q Well, the point of the ratio is to be able to determine whether there's a restrictive versus an obstructive process; correct?**

A. It does help with that, but it would still be nice to look at all the numbers including the FEV1, because you're getting it anyway.

**Q You're getting it anyway. So, my question, though, is if you put in DLCO as an alternative basis where the forced vital capacity results do not show restrictions, how do you find out whether the DLCO, on its face, the DLCO won't tell you whether a loss of defusing capacity is caused by restriction or caused by many other things, including smoking; correct?**

A. How do you tell that is, you go to item four of this medical exposure criteria, supporting medical documentation. You look to see what the documentation says and what the judgement of the doctor is as to what the cause of the reduced DLCO is.

**Q But that's individual review.**

A. Not if you're asking it to be done before you send it in.

ARTHUR L. FRANK, M.D., PH.D.

**Q No. What you're asking to be done is that people must qualify for things that appear above, plus supply the documentation of it. It doesn't require that you submit the whole medical record.**

A. It says, "Supporting medical documentation establishing asbestos exposure as a contributing fact in causing the pulmonary disease in question."

**Q Which is what they have above. That is, you have to have documentation of these things.**

MR. HEBERLING: Objection; argumentative.

THE WITNESS: It says you have to have --

BY MR. BERNICK:

**Q Let's make it simpler, because now we're back into parsing the TDP, and I know that that is something you don't have the -- forget all that. Question, if you have a DLCO, that's what you have, there are many other causes of loss of diffusing function capacity that in order to evaluate you would have to have medical files; correct?**

A. You need to have medical files to do this



ARTHUR L. FRANK, M.D., PH.D.

assessment.

**Q I'm asking you whether you would need to have medical files; correct?**

A. You would need to have medical files just as you would need to have medical files for these cases as well.

**Q Well, you wouldn't need to have medical -- all you need to have for the forced vital capacity are the force vital capacity results?**

A. No, it requires all of these things, that somebody still has to look at, including a medical assessment that links them all together. That's what it says here.

**Q Okay. We'll take a lunch break.**

A. Okay.

- - -

(Whereupon a short break was taken at this time.)

- - -

BY MR. BERNICK:

**Q Dr. Frank?**

A. Yes, sir.

**Q The TDP, focusing again on Roman IV B.**

A. Yes.



ARTHUR L. FRANK, M.D., PH.D.

**Q I want to figure out whether that TDP has the effect of excluding, not picking up, what's called excluding, people with diffuse pleural disease outside of Libby; people who are described in the scientific literature, nothing to do with Libby, and have diffuse pleural thickening. And my question to you is whether some of them are excluded, not picked up by the TDP, Roman IV B?**

A. There shouldn't be anything different about people outside Libby than inside Libby. It will pick up or not pick up people according to whatever criteria you get adopted.

**Q We know from the literature that there are people with diffuse pleural thickening outside of Libby who wouldn't meet the thickness and the extent requirements; right?**

A. There will be people inside Libby who won't meet it.

**Q I understand that. But I'm focusing first on outside and then we'll get to Libby.**

A. There is nothing different about the people outside than inside.

**Q Well, I guess that really kind of then takes me to the question. Is there any analysis that**



**ARTHUR L. FRANK, M.D., PH.D.**

**has been done which says that the proportion of people with nonmalignant asbestos-related disease as a result of exposures in Libby, that the mix of those people, in terms of whether they have diffuse pleural thickening or not is any different than it is outside of Libby?**

A. I haven't seen that kind of comparison. What I can tell you is the percentage of people in Libby with only community exposure getting disease is far higher than I've seen anywhere else. But I've not seen what proportion have that particular problem in Libby versus the proportion that have it outside of Libby. The closest you would be able to get to look at that is, let's say, something like Dr. Lillis study where you have the insulators where she found roughly twenty percent met those criteria. I don't know what the percentage would be in Libby.

**Q But the insulators would have been workers; right?**

A. Well, you didn't specify workers or nonworkers. You said people in Libby, that could include workers.

**Q But I mean, just in general terms, you're**

Page 194

ARTHUR L. FRANK, M.D., PH.D.

**not aware of anybody else who has done an analysis of disease patterns of Libby to see if it comes to nonmalignant respiratory disease and diffuse pleural thickening specifically whether there is a different pattern of manifestation of those conditions on Libby versus elsewhere?**

A. I've not seen it published. I can tell you from my various trips to Libby and in talking with the doctors at the CARD Clinic that there do seem to be factors in Libby that do not sound like what I've seen in any other group or read about in any other group. There's a higher percentage of people with chest pain, which is a rare manifestation of asbestos-related disease in other populations.

There appears to be a pattern in some individuals of acute obstructive changes, which tend not to be seen elsewhere. There is a severity of disease leading to death with rather minimal changes on x-ray, some of which are even only found occasionally on CT scan that is not like the pattern of disease I see elsewhere, but none of that has been written or put into the scientific literature.

Page 195

ARTHUR L. FRANK, M.D., PH.D.

**Q And have you done the analysis about whether the TDP category Roman IV B would have any kind of disproportionate effect on people with diffuse pleural disease at Libby?**

A. I have not done that kind of analysis.

**Q Are you aware of anybody who has?**

A. No.

**Q Let me ask you about the mortality data that you've worked on, and then I'll be done. As I understand it, there's a group of people who were residents of Libby who died and whose disease has been recorded at the CARD Clinic and in turn reviewed by Dr. Whitehouse and others, including yourself?**

A. Yes.

**Q And that the review of the mortality experience at the CARD Clinic, can we just call that the CARD mortality study or CARD mortality data?**

A. Yes.

**Q Which would you prefer?**

A. The latter.

**Q Okay. And as I further understand it, the CARD mortality data, the analysis of that data,**

Page 196

ARTHUR L. FRANK, M.D., PH.D.

**has now been updated as of May of this year?**

A. Yes.

**Q And that updated data is not reflected in various sur-sur-supplemental-supplemental-supplemental reports; right?**

A. I'm not sure I know what a sur-sur-supplemental-supplemental-supplemental report is, but I think you're being a little facetious, but it has been reflected in other documents.

**Q Right. I was being a little facetious?**

A. Well, I just want the record to be clear about that so I'm not answering something that made no real sense.

**Q Later on it will come back to haunt you as a serious statement.**

A. You can imagine in the number of depositions that I've given lines are pulled out in kinds of places.

**Q Right. So, as I understand it, you in particular have gone ahead and reviewed the medical records of seventy-six nonmalignant deaths; is that correct?**

Page 197

ARTHUR L. FRANK, M.D., PH.D.

A. No, I have not reviewed the medical records. I have reviewed radiographic data, but I've not reviewed the medical records in all those cases.

MR. HEBERLING: Off the record.

- - -

(Whereupon a discussion was held off the stenographic record.)

- - -

BY MR. BERNICK:

**Q To get back on the same page, there were seventy-six nonmalignant deaths where you read the documentation of the radiographic readings?**

A. I read the x-rays or the CT scans and made measurements, not just reading the documentation.

**Q Now, how did seventy-six get picked out?**

A. Those were the deaths at the clinic from individuals I believe you said the criteria were nonoccupational exposure.

**Q No, I didn't say that.**

A. These were the deaths at the clinic with -- I'm not exactly sure, as I sit here right now, to remember how those seventy-six got selected.

**Q And maybe this will shorten the examination even more and we'll wait for Dr. Whitehouse to**

**clarify all these things when we examine him. My understanding is that of the people who had asbestos-related illness at the CARD Clinic and died, and have died up through May of this year, that those cases of mortality were reviewed in order to determine whether asbestos-related illness was a contributing factor in the deaths of these individuals?**

A. No. It was reviewed --

MR. HEBERLING: Objection; misstates the record.

MR. BERNICK: That's not even an objection. It's object to form.

BY MR. BERNICK:

**Q If I'm wrong, tell me why I'm wrong.**

A. The last part of your statement --

**Q Well, there was some analysis that was done.**

A. Right, that these --

**Q All right. You go ahead.**

A. These were people that have died at the CARD Clinic, and I forget how you characterize it. I was just about to answer and the objection came in and the thought left my head. There were people that died at the CARD Clinic for which there was





radiographic evidence and you said as --

**Q As the cause.**

A. -- cause of death. No, that was the mischaracterization. There were seventy-six deaths and they had been analyzed by underlining cause of death or the disease was present but didn't necessarily cause their death. So, the number who died of what appeared to be asbestos-related disease who entered that study, I think the number is now sixty-two, that's the --

**Q Let me just get at this. A subset -- if we begin with the group of people who died and who were studied or seen at the CARD Clinic --**

A. Right.

**Q -- and, therefore, made their way into the mortality study, some subgroup of them was identified where a determination was made that their death was, in some fashion or by some test, caused by their asbestos exposure?**

A. Correct.

**Q Were you involved in the process of making the determination of the causal relationship between the death of those individuals on the one hand and their exposure to asbestos on the other?**





A. I did not have a role in the decision about any given case I had discussions over what the criteria to be used would look like to make the data as compatible as we could with the way that I have been trained and brought up at Mount Sinai with Dr. Selikoff to make that determination. Since you know, as I'm sure you do, his data looks at, for example, death certificate data and then best evidence. And the best evidence sometimes supercedes and clarifies what is written on the death certificate. So, the mortality study, the ultimate decision was not made by me, but the process and the construct to use I had a contribution to.

**Q So, you are knowledgeable about it?**

A. Yes.

**Q So, the goal is to isolate or find within the broader group of people who died at CARD, or who died and whose records are at CARD, find the subgroup of those whose deaths were, in some fashion, causally attributable to their asbestos exposure. That was the goal; right?**

A. Yes.

**Q And the question was, what should be the**





**test of the relationship? What test should be adopted in determining whether the death was caused by asbestos exposure, that was the issue you were addressing; right?**

A. Yes.

**Q And what ultimately was the test, as you understood it, that was used in analyzing the CARD mortality data? Just state it for us.**

A. That those that would be said to have died of an asbestos-related disease had their, as the underlining cause of death, a disease that was related to asbestos. Other individuals had evidence of asbestos disease, but it did not contribute -- or it may have contributed to their death or it may have been present when they died of something unrelated to asbestos, and those would be categorized separately.

**Q So, I want to become now more precise about that. As I understand it, there was a review done of the death certificates for the individuals at the CARD Clinic; correct?**

A. Yes.

**Q And death certificates typically have a primary cause of death and then they have a second**

**line --**

A. It's not primary. It's usually immediate cause of death caused by or due to -- they have several such lines, and then they usually have another box that says, other significant conditions.

**Q So, in your own words, then, two lines to the death certificate?**

A. Well, there's at least three, probably four lines. For example, the immediate cause of death could be listed as pulmonary arrest or cardiac arrest. The underlying cause could be a lung cancer or asbestosis. So, you code it as to what the underlying cause was, not the immediate physiological entity.

**Q So, what does "immediate cause" mean in a death certificate? What is it supposed to mean?**

A. What was the final event that caused the demise.

**Q And then the second line or second cause was what, again?**

A. It's usually called "due to" or sometimes it says "as a consequence of".

**Q And what's the test for whether something is**





**a cause? What's the test of what goes on that second line?**

A. There are official ways of doing that called -- there are individuals who do such coding. They're called nosologists.

**Q Right.**

A. And that's the official way to do it. But basically the other way to do it is to look at the totality of the record and make a clinical judgement as to what the cause of death is. And so the death certificate may say, you know, pulmonary arrest or heart attack or something like that, but then it's caused by something else. Sometimes they're very simple and straightforward, there isn't this multiplicative of lines that are used.

It simply says lung cancer or mesothelioma, but sometimes it says pulmonary arrest due to mesothelioma. So, the cause of death was mesothelioma and not the physiological event.

**Q So, to put it in a nutshell, the death certificate is supposed to reflect the immediate cause of death, that being the condition immediate**





**precedent to death, and then it's also supposed to reflect the cause of death; that is, what the death was due to.**

A. Is that a question or a statement?

**Q An attempt to make a succinct statement and ask you whether it was true or not.**

A. The reality of the way death certificates are filled out is sort of as follows, very rarely do physicians in their training, either in medical school or as residents, get training in filling out death certificates. We are not trained as a nosologist would be trained, and death certificates have significant problems with it.

Most physicians will put down as the cause of death not the immediate physiologic entity, such as cardiac arrest or pulmonary arrest, or whatever, but they will put down the underlying cause. Some go through more of a complicated step. But I would say the vast majority of death certificates will have one cause, but it is also entirely legitimate to put down that series of events, and there's no good rule that doctors follow.

For example, it may say pulmonary





arrest caused by mesothelioma as a consequence of asbestos exposure. I mean, you will see that on death certificates. So, you have to make some judgement and the judgement is the cause of death was really mesothelioma.

**Q That's what you are aiming for, is to determine the cause of death?**

A. The cause of death. The most accurate depiction of the cause of death.

**Q Now, what you're saying is that because the death certificate either might not be available or may not be properly filled out or may not be very revealing, in the work that you've done outside of Libby, you can look to the best evidence, I think is what you called it?**

A. Correct.

**Q And what does the best evidence refer to?**

A. And I haven't done those kinds of study, just to be clear. I was part of the studies at Sinai where this was done and it had to do with the insulators cohort that we talked about earlier this morning.

When an insulator would die, a copy of the death certificate would come to Mount

Sinai. What Dr. Selikoff would then do is write to the physician and/or to the hospital, it was usually the hospital where the death occurred, and obtain medical records and ideally obtain pathology, and then Dr. Suzuki, one of the pathologists who was on the staff in the environmental sciences laboratory, would review the tissue, because there were many errors, especially back in the '70's and such where things as mesothelioma weren't as well-recognized, and there would be misdiagnoses.

For example, it would say carcinomatosis of the abdomen as a cause of death, and they would miss the fact that it was a peritoneal mesothelioma. Or it would be listed as a lung cancer when it was a meso. Or sometimes it was listed as a meso when it was actually a lung cancer. So, at the end of the day we relied upon the most accurate and experienced pathologic diagnosis, along with the clinical judgement that Dr. Selikoff would bring as he would classify those.

**Q Again, was the goal to be looking for the judgement that you were looking to make was a**





**judgement about the cause of death; correct?**

A. Yes.

**Q Now, this process, this kind of best evidence method, I understand that you're familiar with it and it was used by Dr. Selikoff, but has it ever actually been published anywhere as a methodology for determining the cause of death?**

A. Not that I'm aware of and I'm aware of many other studies where they've gone to that level of follow-up to obtain the original tissues and so forth. And so most studies will just use what's listed on the death certificate, but, again, having done a study as a student working with Dr. Selikoff reviewing death certificates, I can tell you that death certificates are woefully incorrect and inadequate for good epidemiological work.

**Q For purposes of the work that Dr. Selikoff was doing, which was to do research; right?**

A. Yes.

**Q It was important for him in doing his research to have consistency in what he was using as a measure of cause and including cause of mortality in his mortality studies; is that right?**





A. Yes.

**Q And so he's got a lot of people who have death certificates and those death certificates are going to be filled out to reflect the cause in the way that you've indicated subject to all its limitations?**

A. Yes.

**Q And where he didn't have the death certificate or he had new people coming in and he wanted to include them in all cases the common denominator was, for doing his research, he wanted to be able to say, here was the cause of death; fair?**

A. First of all, he did have a death certificate in every case. He wouldn't always have hospital records or tissue. And if you look at his published data, he always listed both. He puts down DC, death certificate evidence, and then he puts BE, best evidence. And you'll notice for particularly the malignancies there are a fair number of discrepancies.

**Q So, I stand corrected, and that's fine, but basically for Dr. Selikoff to do his research and put together mortality studies, which involve**





**death, it was important for him to be ascertaining in each case a cause of death?**

A. Yes.

**Q And in your consultation in connection with this case, you advised Dr. Whitehouse, or others, on how to do it the same way as Dr. Selikoff?**

A. As close as we can get to it, yes, without doing a separate pathological review.

**Q Now, in the legal world, how many times have you been asked for your opinion on whether a certain asbestos exposure was a substantial contributing factor in causing disease or death?**

A. Many times.

**Q Many times. "A substantial contributing factor" is a legal term; correct?**

A. Yes.

**Q "Substantial contributing factor" is not a scientific term; correct?**

A. Correct, and so I've testified many times.

**Q And so you've testified many times. In figuring out which of the CARD mortality cases were caused by Libby asbestos exposure, did anybody apply -- was the test applied whether asbestos exposure was the cause or was the test**

**applied whether asbestos exposure was a substantial contributing factor?**
A. I believe it was the latter rather than the former. For example, you could have a lung cancer which could have two causes, but a substantial contributing cause would be the exposure to asbestos. If you had a mesothelioma, then it's a lot easier than it's the asbestos.
**Q So, in the case of lung cancer, even where the person was a smoker, if they had a history of exposure to asbestos, asbestos could still be found to be a substantial contributing factor; fair?**
A. Yes.
**Q Whose decision was it to use "substantial contributing factor" as opposed to "the cause"?**
MR. HEBERLING: Objection; assumes that "substantial contributing factor" was used.
BY MR. BERNICK:
**Q This is an effort to tell you something. But I'm just asking for what you know. Whose decision was it?**
A. I am not sure the decision was used to use the term "substantial contributing cause", which



is we have now both agreed is a legal term. It was Dr. Whitehouse who made the ultimate decision of was this a death that was an asbestos-related death or not.
**Q When it came to the seventy-six nonmalignant deaths that you read --**
A. Yes.
**Q -- was it your understanding that these were deaths where asbestos-related illness was a substantial contributing factor or a significant contributing factor or is it your understanding that these were cases where asbestos-related illness was the cause of death?**
A. When I read the x-rays I knew that these were all patients that had had asbestos-related disease. I did not know what the ultimate judgement was about those particular individuals as to what was thought to be their cause of death. That was not a part of the analysis that I made. So, I don't know ultimately, and you'll ask Dr. Whitehouse, I'm sure, what criteria he used.
**Q Ultimately, how many of the people who were included in the seventy-six nonmalignant deaths, how many of those people had diffuse pleural**



**thickening?**
A. It's all there on the table. I don't have the number in my head out of that what number did. More had pleural plaques and diffuse pleural thickening, is my recollection, but I can't give you the numbers. I would have to see the tables and look them again.
**Q Do you know out of the seventy-six people how many people in the CARD study had both diffuse pleural thickening, with or without costophrenic blunting, and had restrictive lung function below the range of normal?**
A. I didn't look at the pulmonary function data for those individuals. I was simply reading those x-rays and doing my own independent analysis of what was on the x-rays or CT scans. I do know just antidotally without an analysis that there would have been many individuals who were judged to have died of an asbestos-related disease --
**Q The cause, or substantial --**
A. The cause, who would not fit the criteria as they are outlined in document eleven.
**Q Which is, are you talking about, category one --**



A. Any category. They wouldn't fit any category.
**Q They wouldn't fit any category?**
A. Correct. Well, I guess they would fit probably the second to last one, whatever the -- there were people --
**Q Well, let's be clear.**
A. Okay. There were people who would not have fit the category of severe asbestosis, though they died of asbestos disease because they wouldn't have either met the criteria as listed here, nor would they have fit category IV B, severe disabling pleural disease, because they wouldn't fit those criteria either. But they were dead from their asbestos disease.
**Q Well, let's just be clear, have you done your own analysis of the cause of death for anybody at the CARD Clinic?**
A. No.
**Q So, when you say there are people who died of asbestos-related disease, you're relying upon there being a death certificate that says that or the best evidence analysis done by somebody else?**
A. Dr. Whitehouse.

ARTHUR L. FRANK, M.D., PH.D.

**Q Dr. Whitehouse. In how many cases -- did you actually look at the death certificates?**
A. No.
**Q So, you don't know how many of the people who comprised the mortality study had a death certificate that said they died of asbestos disease or Whitehouse analysis based on best evidence? You don't know how the population breaks out?**
A. More than half the people died of an asbestos-related disease.
**Q In the CARD Clinic study?**
A. Of this seventy-six.
**Q I understand that, but you don't know in how many cases that statement was based upon a death certificate as opposed to Dr. Whitehouse's best evidence analysis?**
A. Well, every case that had a death certificate was also given his best evidence analysis, so there's both and they could be congruent or they could be different.
**Q But I'm saying, you don't know --**
A. I don't know how that breaks down.
**Q In how many cases -- well, did**



**ARTHUR L. FRANK, M.D., PH.D.**

**Dr. Whitehouse fill out any of the death certificates himself?**
A. I believe he did, but I can't say that for sure. Some of them were patients he knew. Over the years I don't know if he himself filled out the death certificates or not.
**Q In how many cases --**
A. He knew all of these individuals.
**Q He knew all of these individuals, and where he didn't fill out the death certificate, the death certificate could have been filled out by somebody who talked with him about how it should be filled out; correct?**
A. Anything could be possible. They could have talked to him. They could have talked to somebody else. They could have just filled it out themselves, it depends where they died. It could have been the house staff on duty who filled it out. Who knows.
**Q With respect to the seventy-six nonmalignant deaths that you analyzed, in how many cases was a cause of death determined by somebody other than Dr. Whitehouse or people who practiced with Dr. Whitehouse?**



**ARTHUR L. FRANK, M.D., PH.D.**

A. I don't know. I didn't do any of that analysis. I told you the only thing I did was read the radiology and make my independent judgement of what was there on the radiographs.
**Q I just want to ask you very plainly, on reading the radiology, you filled out a bunch of forms; right?**
A. I did.
**Q Who put together the forms?**
A. Dr. Whitehouse. It was a form that he had used to do the first reading, and then he brought blank forms and the materials and we sat there and I read the x-rays independently.
**Q So, Dr. Whitehouse had already read all the x-rays that comprised the seventy-six people?**
A. He had.
**Q And he had filled out his own form and basically you were there to be a second read?**
A. Yes.
**Q Now, that was not a blind read; right? You didn't have any controls that you were looking at?**
A. No.
**Q You just knew that everybody who comprised --**



**ARTHUR L. FRANK, M.D., PH.D.**

A. Actually, no, I think I asked him -- now that I think about it. I can't recall. We discussed it and I just can't recall if we did this. He had, you know, a computer full of these reads and I said I would like to also put some in there that aren't part of this group, because that way I'm reading them blind and I don't know who is who.
**Q Do you know if he did that or not?**
A. Honestly, I don't recall.
**Q Do you know, when you did the reading --**
A. We may not have, but we certainly discussed it.
**Q But did you fill out a sheet for every one that you read?**
A. Yes.
**Q And then a total of how many did you read?**
A. I don't recall.
MR. BERNICK: The sheets that he filled out, were they attached to something?
MR. STANSBURY: An expert report, yes.
BY MR. BERNICK:
**Q Did you attach to your expert report all of**

Page 218

ARTHUR L. FRANK, M.D., PH.D.

**the sheets that you filled out?**
A. I belive so. If there are seventy-six, then there's only that seventy-six. If there is more than seventy-six, then it was other cases as well.
**Q But if it's only seventy-six, if it's seventy-six or less, than, in fact, the procedure that you used --**
A. I knew that these were all people that had been judged to have had disease.
**Q So, in that case, it was not a blind reading?**
A. Correct.
**Q And we'll, again, try and figure that out with Dr. Whitehouse. Was there anybody else, besides you and Dr. Whitehouse, who read the x-rays of these people for purposes of doing this analysis?**
A. Not that I'm aware of. And Dr. Welch was present when we did this, as were some of your legal colleagues.
**Q Is that right? They're holding out on me. Do you know why you were chosen or asked to do this second read of the x-rays?**
A. You would have to ask the people that asked

Page 219

ARTHUR L. FRANK, M.D., PH.D.

me why they chose me.
**Q You didn't say why me?**
A. No.
**Q You just said okay?**
A. Yes.
**Q Now, you testified before, as I know, I'm sure because I have such a good memory, that typically you don't do reading of x-rays; correct?**
A. I do them whenever they are sent to me. Most lawyers do not send me x-rays. Those that do, I read. And years ago, when there were a lot more cases of asbestosis that were part of the mix of the cases that I saw, I saw a lot more x-rays and read them quite regularly.
I would say at least eighty, maybe ninety percent of the cases that I see now are mesotheliomas, and x-rays are pretty irrelevant. And even in the few that are lung cancers, I probably don't see more than two or three cases of asbestosis a year any more.
**Q Did you discuss with Dr. Whitehouse or with anybody else what was the purpose of you doing the second read as opposed to somebody who was a certified "B" Reader?**

Page 220

ARTHUR L. FRANK, M.D., PH.D.

A. We did not have that discussion. And CTs are not relevant with regard to "B" Readership anyway in terms of the measurements on those.
**Q But you just didn't review the CTs?**
A. No, we didn't do just that. No, that's true.
**Q So, when it came to the x-rays there are certainly people who are more qualified than you to performed a second "B" Read of x-rays; is that correct?**
A. Is that a statement or a judgement?
**Q It's a statement that I think you're going to agree with because I think it's true.**
A. I don't think being a "B" Reader or not, even though I took the exam once and didn't pass it, makes me either unqualified or less qualified. I have been reading x-rays for close to forty years. I have been trained by Dr. Selikoff to read them. I've had research papers published on the basis of my readings of x-rays, but I am not a "B" Reader. I mean, that's the only thing I am not, but if you say that just because someone is a "B" Reader they are more qualified --
**Q I didn't say that.**

Page 221

ARTHUR L. FRANK, M.D., PH.D.

A. Well, that was the implication.
**Q I'll repose my question. I apologize for its coming across as being, in some fashion, a slight. It was not intended to be. But there certainly are people who are more qualified than you to do a second reading of an x-ray for asbestos-related illness; correct?**
A. I think I'm as qualified as anyone to do a second reading or a first reading or a tenth reading of an x-ray looking for asbestos disease as anybody else. So, I don't know what you mean by "more qualified".
The only qualification that I don't have, if you want to use that as a standard, is there are "B" Readers. I am not a "B" Reader. That would be one judgement to say they are better qualified. But I would think there are very few physicians who have seen as many x-rays as I have.
**Q Let's just talk about asbestosis, and let's talk about pleural thickening in particular. Do you think that following the conventions that are followed by scientists in your field when it comes to saying somebody is an expert or not, do you think that you're an expert in "B" Reading of**

**diffuse pleural thickening?**
A. First of all, I'm not a "B" Reader, so let's leave that out. "B" Reading is a convention. I mean, I do readings using the ILO classification. That doesn't make them a "B" Read, but they are like what a "B" Reader would use. I would say that I've had as much experience in doing this as anyone I know of, especially with regard to asbestos.

If you want to say to me are there people who are more experience in reading x-rays for co-workers pneumoconiosis or more silicotics than I've seen, there are probably, undoubtedly, people that have seen far more of those x-rays. But I have seen as many x-rays and have probably have had as much experience as any of my contemporaries that I am aware of.

**Q Well, why can't you tell us whether blunting of the costophrenic angle affects either or both of the parietal or viscera pleura?**
A. You can't tell that from an x-ray.
**Q You can't?**
A. Well, when you see a blunting, you don't know exactly -- I mean, we had that discussion





earlier. I don't know the anatomy of that.
**Q Why wouldn't you if you were an expert in reading the x-rays in that particular respect?**
A. Because you are not marking down on a form is it a parietal pleura or is it a visceral pleura. You're marking down is there evidence of a blunted angle. That's all you're marking down. And you don't know what it's from. I mean, it could be fluid, too. That's all -- you know, I can tell a blunted angle as well anybody else. You could probably even tell one.
**Q Don't get carried away.**
A. There are some lawyers who have either wanted to or actually took the "B" Reader exam.
**Q I'm not one of those people. Any question that smoking can cause a loss of diffusing capacity?**
A. In some people, it certainly does.
**Q That's not an infrequent -- it's a well-established potential consequence of smoking; correct?**
A. I wouldn't say it's all that frequent. You have to have pretty severe lung disease to get a drop in DLCO just from cigarettes.





**Q Do you know about the background of the revisions to the ILO guidelines in 2000; that is, how the revision came about?**
A. No. I was not part of that process.
**Q Have you studied that process?**
A. Not especially. I had colleagues at Sinai who were involved with earlier such iterations, and they were off doing that. Selikoff would do it, Dr. Lillis would do it.
**Q The ILO guidelines are part of a process that involves people who you would, in fact, acknowledged that given conventions of the word "expert" in the scientific field are experts in your field; correct?**
A. Yes.
**Q And the process of developing and revising the ILO classifications and guidelines is a process taken very, very seriously and an attempt is made to meet the highest standards; correct?**
A. I would like to think so.
**Q That's certainly your understanding; correct?**
A. Right. But there are serious flaws with the system in many ways.





**Q I have nothing further at this time.**
MR. HEBERLING: Anyone on the speaker phone who would like to examine?
MS. KUCHINSKY: I would, but I won't.
MR. COCKRELL: Dale Cockrell; I have no questions.
MR. HEBERLING: Well, I will ask a couple.
MR. BERNICK: At your peril.

- - -

EXAMINATION

- - -

BY MR. HEBERLING:
**Q Do you recall the discussion of the 1,800 people diagnosed at the CARD Clinic with asbestos-related disease?**
A. I do.
**Q And of the 1,800 so diagnosed, do you have an opinion whether an individual with normal lung functions and an asbestos-related disease diagnosis will be more likely than not to die of an asbestos-related disease, malignant or nonmalignant?**

**ARTHUR L. FRANK, M.D., PH.D.**

MR. FINCH: Objection.

MR. BERNICK: Objection. It's not in his expert reports and you haven't provided a foundation for it.

MR. FINCH: Same objection.

THE WITNESS: The data that we have from the CARD Clinic, as I understand it, is that more than fifty percent of the individuals who have been diagnosed with a nonmalignant asbestos disease will ultimately die of an asbestos disease. So, it is entirely possible that of the 1,800 people, a large number of them will die of an asbestos-related disease.

MR. BERNICK: Is that the best you can do?

MR. HEBERLING: Wait a minute, I'm doing the examination.

MR. BERNICK: We're creating a record here. Go ahead.

MR. FINCH: Go ahead. I'll have some follow up based on this.

BY MR. HEBERLING:

**Q As to an individual diagnosed with asbestos disease, do you have an opinion whether it is more**



**ARTHUR L. FRANK, M.D., PH.D.**

**likely than not that they would die of an asbestos-related disease, malignant or nonmalignant?**

MR. BERNICK: I'm sorry; can I have the question read back?

- - -

(Whereupon the preceding question was read back.)

- - -

MR. BERNICK: Which individual, Libby or some place else?

MR. HEBERLING: CARD Clinic person.

MR. BERNICK: CARD Clinic person, so somebody diagnosed today; is that the question?

MR. HEBERLING: That's the question, yes.

MR. FINCH: Objection; lack of foundation, lack of disclosure of expert information on which he relies to make that statement.

MR. HEBERLING: It's in his report.

MR. FINCH: No, it's not.

MR. HEBERLING: Yes.



ARTHUR L. FRANK, M.D., PH.D.

MR. BERNICK: Well, there's no basis for it. It's in his report, but there's no basis for it in his report. It's the same problem. Go ahead, answer the question.

THE WITNESS: If the pattern of disease holds as it has for people so far, it is more likely than not that an individual will die of an asbestos-related disease. That does not mean everyone will, and I can't predict who those would be, but the odds are given on the basis of what has occurred. So far if the pattern holds, more than fifty percent will die of an asbestos-related disease.

MR. BERNICK: Fifty percent of what?

THE WITNESS: Of the 1,800.

MR. BERNICK: He didn't ask you that. He's asking about an individual.

MR. HEBERLING: You will have the opportunity to examine him, Mr. Bernick. Please don't interrupt.

MR. BERNICK: Go ahead. Sorry.

BY MR. HEBERLING:

**Q Do you recall a discussion of the Lillis**



**ARTHUR L. FRANK, M.D., PH.D.**

**1991 article?**

A. Yes.

**Q And there was a group with diffuse pleural thickening defined as requiring blunting?**

A. Yes.

**Q And then there was another group with pleural thickening without blunting?**

A. Yes, called pleural plaques.

MR. FINCH: Objection to form.

BY MR. HEBERLING:

**Q And in the group without blunting, was increasing pleural thickening predictive of loss of lung function?**

MR. BERNICK: Objection; leading.

THE WITNESS: Yes. There was a statistically significant relationship that as the severity of the pleural disease got worse, the pulmonary function would get worse.

BY MR. HEBERLING:

**Q And did this hold for the diffuse pleural thickening group?**

MR. BERNICK: Objection; leading.

BY MR. HEBERLING:

**Q Do you have an opinion whether this held as**

**to the diffuse pleural thickening group, which did have blunting?**

MR. BERNICK: Same thing; it's still leading.

THE WITNESS: I have an opinion, and the opinion, based upon the data, is that there was no statistically significant difference with regard to the severity of disease correlated, pulmonary function related, to the severity of the radiologic changes.

MR. HEBERLING: That's it.

- - -

EXAMINATION

- - -

BY MR. BERNICK:

**Q Do you believe it's appropriate as an expert witness to testify in response to your Counsel's question to opinions where you don't have knowledge of the data?**

A. If I don't have knowledge of the data, as you've heard me say, I will say I don't have knowledge of the data.

**Q Will you say to us here today, notwithstanding having answered the questions that**





**Mr. Heberling posed, you don't have the data on what comprises the 1,800 people?**

A. The data I have is that there are 1,800 people who have been diagnosed with nonmalignant disease at the CARD Clinic.

**Q And who told you that?**

A. Mr. Heberling.

**Q Did anyone else tell you that?**

A. It's probably in Dr. Whitehouse's report.

**Q Did anyone else tell you that?**

A. Tell me that 1,800 people at the CARD Clinic have asbestos disease?

**Q Have been diagnosed as having asbestos-related illness?**

A. Not that I recall.

**Q Did you actually look to see whether that statement of Mr. Heberling gave you was true?**

A. I did not look at 1,800 sets of records.

**Q I didn't ask you that. Did you have any data saying what Mr. Heberling said was true?**

A. If I can find it -- here is Dr. Whitehouse's report. I believe he has a statement to that in here. The CARD Clinic has diagnosed over 1,800 patients with asbestos-related disease.





**Q So, do you know how many of those people have pleural plaques?**

A. No.

**Q Do you have idea how many of those people have pleural thickening?**

A. It's not enumerated here.

**Q Do you know how many of those people have any diminution in lung function?**

A. No.

**Q So, you offered an opinion that 1,800 people are more likely than not -- of those people each one of them is more likely than not to die of an asbestos-related illness when you have no idea of the portion of those people with pleural plaque; correct?**

A. What I have seen is similar patients with nonmalignant asbestos disease --

**Q I didn't ask you that.**

A. It's not based on the statement if I know if they had pleural plaques or not.

**Q I want you to assume that ninety percent of these people have pleural plaques. That's all they have is pleural plaques. Is it still accurate to stay that more than half of the 1,800,**





**or within the 1,800, it is more likely than not that they will die of an asbestos-related illness?**

MR. HEBERLING: Objection; unclear as to the meaning of "pleural plaques".

BY MR. BERNICK:

**Q Does "pleural plaque" have any lack of clarity to you, Dr. Frank?**

A. Not at the moment.

**Q So, with that clear notion of what a pleural plaque is, I want you to assume that ninety percent of the people who comprise the 1,800 have pleural plaques. Is your testimony in response to Mr. Heberling's question still accurate?**

A. My statement was if it follows the same patterns as other -- that's what I said. If it follows the same pattern as other individuals that have died so far with asbestos-related disease. And we didn't qualify those as to asbestosis or pleural plaques or whatever, then the statement would hold true.

If you want to ask me about the pleural plaques specifically, I would have to go back and look at the seventy-six that have died and see which percentage of those had only pleural

plaques or how many had asbestosis, how many malignancies there were and then I can more actually answer your question. But I answered accurately within the confines of what was put to me and how I answered.

**Q The data that you have is for mortality; right?**

A. Right.

**Q And the mortalities are mortalities where you have the data, you know what the pattern is and, therefore, you can make the statement; correct?**

A. And I said, if the pattern holds, then --

**Q I'm sorry; just one at a time.**

A. Yes.

**Q With respect to the people who have died and the mortality that are comprised by the mortality data, you have there knowledge of what the pattern of disease and manifestation is; correct?**

A. Right. Some got lung cancer, some got mesothelioma, some died of asbestosis or pleural disease.

**Q I asked you before would it appropriate to offer testimony, even in response to**





**Mr. Heberling's questions where you don't have any data. Do you remember that?**

A. Yes.

**Q You don't have data for what the pattern of disease is for the 1,800; correct?**

A. Which is why I said if the pattern holds. You're right, I do not have the pattern of disease.

**Q Therefore, it would be inappropriate to express any opinion with respect to what the future might bring with respect to the 1,800 themselves; correct?**

A. No, it's not inappropriate. It's the same thing going back to the 17,800 insulators. We know after years and the pattern of disease from a subset of those that have died, that about twenty percent die of lung cancer and ten percent die of mesotheliomas and ten percent die of asbestosis, and another percent die of other asbestos-related cancers.

So, in the asbestos insulators, looking to the future to the ones that haven't died, you can say that about half of them can be expected to die of an asbestos-related disease.





So, similarly, on the basis of what we do have, if the same pattern holds for the 1,800 as applies to the seventy-six, that is what you would expect.

**Q But for the insulators you had epidemiological studies follow that cohort over time, correct, years of epidemiological studies?**

A. Right.

**Q Controlled epidemiological studies; correct?**

A. Right.

**Q With respect to the Libby CARD study, you do not have any controlled epidemiological data; correct?**

A. But what you have is --

**Q Do you have any controlled --**

MR. HEBERLING: Just a minute. Let him finish his --

THE WITNESS: You don't have controlled epidemiology, but you have a pattern of disease in those people that have been diagnosed with a nonmalignant asbestos disease, and more than half of them have died of -- ultimately have been judged to die of an asbestos-related condition.

BY MR. BERNICK:





**Q Right. And those are the people who have already been diagnosed and died of an asbestos-related illness?**

A. Right. And these are people, the 1,800 of those who have been diagnosed, but they haven't died yet.

**Q Right. And, therefore, you do not know what the pattern of mortality is for that group of people; correct?**

A. We'll know it when they're all dead.

**Q No. You do not know anything about the pattern of mortality for the 1,800; correct?**

A. No. If the seventy-six are a subset of the 1,800, then we have some data as to the pattern of mortality.

**Q That's what's called apples and oranges.**

A. No.

**Q 1,800 haven't died, so you can't say --**

A. But 17,800 asbestos insulators haven't died either.

**Q With respect to the 17,000, they all have not died, but instead of simply knowing proportions of those who have died have died of a certain disease --**

**ARTHUR L. FRANK, M.D., PH.D.**

A. Right.

**Q -- you know much more than that. You have controlled epidemiological studies which tell you with respect to the cohort as a whole both the incidence of disease and incidence of mortality, and it's on the basis of that control data that you're able to make predictions about what future mortality will be both with respect to people and the cohort as a whole and with respect to people who die.**

A. I wouldn't exactly agree with that statement because you have epidemiological data as to the deaths and you can compare that to the general population to say if it's more or less than would occurred anywhere else. You don't have an epidemiological study as to the percent that have disease.

In fact, insulators with thirty years, over ninety percent of them have disease, so it's pretty much a given that everybody in that cohort has disease. So, there's some similarities. 1,800 people, all of whom have been diagnosed with a nonmalignant disease. 17,000 insulators, at least ninety percent plus after



ARTHUR L. FRANK, M.D., PH.D.

thirty years have disease. You have some subset of those that have died, and here you have a subset.

**Q Remember I asked you at the beginning what it took to have a reasonable scientific basis for an opinion?**

A. Yes.

**Q And you told me that, A, that it had to be the best scientific answer and, B, it had to be based upon studies; right?**

A. Right.

**Q There is no study of the 1,800; correct?**

A. Yes, there is. There is a study of the 1,800, which is that they all have asbestos-related disease.

**Q That's not a study. That's just an assertion that's been given to you.**

MR. HEBERLING: Objection; argumentative, excessively argumentative.

BY MR. BERNICK:

**Q Are you saying that there has been a scientific study of the 1,800 people; yes or no?**

A. I will say that there has been an assessment of 1,800 people -- more than 1,800 people, but of



ARTHUR L. FRANK, M.D., PH.D.

the people studied at the CARD Clinic, 1,800 have been judged by the clinicians at that clinic as having nonmalignant asbestos disease.

**Q And, therefore, you believe that there is a reasonable scientific basis for making future predictions about the probabilities of mortality, a reasonable -- wait. We want to go back to your own standard. Do you believe that there's a reasonable scientific basis for making predictions about probabilities of mortality in the 1,800; yes or no?**

A. Yes, with the caveats as I answered the question.

**Q So, that satisfies your standard. Your opinion about the future of the 1,800 satisfies your own standards as representing the best science?**

A. It's the best of what's available.

**Q No, hold on.**

A. No, it's the best of what's available. Unless you have --

**Q No.**

MR. HEBERLING: Objection. Let him finish.



ARTHUR L. FRANK, M.D., PH.D.

MR. BERNICK: I'll withdraw the question.

MR. HEBERLING: Let him finish. Go ahead and finish your answer.

BY MR. BERNICK:

**Q Go ahead, do whatever you want. Go ahead, answer the question.**

A. Would I like more data? Yes. If I had more data, I probably wouldn't have qualified it the way I did. I said if the pattern holds with what we've seen with the seventy-six, we can expect that of the 1,800 more than half will die of a disease.

**Q I didn't ask about that. That wasn't even remotely related to my question. I asked you about --**

MR. HEBERLING: Objection; excessively argumentative.

BY MR. BERNICK:

**Q I asked you very specific question. I said following your own test of reasonable scientific basis, are you telling me that you have a reasonable scientific basis for making future predictions about what will happen in the way of**

**mortality for the 1,800 people as a group if you're following your own test?**
A. I think within certain limits I have a reasonable ability to say that this group will have a higher mortality of asbestos disease than --
**Q I didn't ask you that question.**
A. Well, that's how I took the question.
**Q Do you want to go back over what you said? You said that where you didn't actually have a study, but instead you had to make reference to other science, you said under those circumstances you would say that it's not scientifically supported, but it's not unreasonable.**
A. Well, here we have a study. It is a limited study. It is seventy-six deaths --
**Q That's the answer you gave me before. You had to have a study of the issue. Before --**
A. That is a study.
**Q Of the issue; the 1,800. You have no study whatsoever of the 1,800.**
A. You're the one doing the apples and oranges. You're saying you have to have the answer before you can make a statement about what will happen.





If I have to have a study of the 1,800, all 1,800 --
**Q No.**
A. -- then this --
**Q You just have to have a --**
MR. HEBERLING: Objection. Let him finish.
BY MR. BERNICK:
**Q You have to have a study of people --**
MR. HEBERLING: Let him finish.
BY MR. BERNICK:
**Q You have to have a study --**
MR. HEBERLING: Let him finish.
BY MR. BERNICK:
**Q You have to have a study of people --**
MR. HEBERLING: Let him finish.
BY MR. BERNICK:
**Q -- who aren't actually dead.**
MR. BERNICK: Objection.
BY MR. BERNICK:
**Q All you have with respect --**
MR. HEBERLING: Objection, Mr. Bernick. You're not letting him finish.
MR. BERNICK: He finished answering





the question.
MR. HEBERLING: No, I don't quite think so.
MR. BERNICK: You can pick it up if there is something that I --
MR. HEBERLING: We're losing the question now because of this verbiage.
MR. BERNICK: Well, the verbiage is necessary because I'm not getting an answer to the question.
THE WITNESS: You're getting an answer, you just don't like the answer.
BY MR. BERNICK:
**Q Let me assure you --**
A. And if you're not clear, then let's pursue it until you're clear.
**Q I am completely and utterly satisfied with every answer that you give that's responsive to my question. It's not a question of preference, its a question of responsiveness. And I just want to know, with respect to the 1,800 all you have is Dr. Whitehouse saying they've been diagnosed with asbestos-related illness. With respect to the CARD mortality study you have far more data and**





**it's focused on a group of people who not only have been so diagnosed, they've died. That's a different perimeter. They are differently defined groups; correct?**
A. One is a subset of the other group.
**Q That could be. Well, there's a lot of things. They're all a subset of Libby just because --**
A. Okay.
**Q Well, you don't know that either one of them are representative of what happens with respect to the Libby population as a whole because you haven't tested that; correct?**
A. And I'm not making any statements about the Libby population as a whole.
**Q That's my whole point. You have nothing on the basis of which scientifically to extrapolate or extend --**
A. To the whole Libby population; absolutely not. You're absolutely correct.
**Q And, likewise, you have nothing on the basis of which to extend the mortality experience of people who already have died to what will be the mortality experience of people who actually have**

**only been diagnosed as having disease. The one statement is a statement about causes of death with respect to people who have died. The other statement is a statement about what people will die of who have simply been diagnosed with the disease. They are two different measures of two different groups scientifically; correct?**

A. No. One is a subset of the other group. I assume that the seventy-six patients who died were a subset of the 1,800 patients with disease.

**Q Fair enough. That is your assumption; correct?**

A. Right. And, again, that's why I said, if the pattern holds.

**Q Have you done anything to test that assumption?**

A. I have not.

**Q Do you know of anyone else who has done anything to test that assumption?**

A. To date, no.

**Q Now, I want to ask you whether you agree or disagree with Dr. Whitehouse himself on this subject. Have you looked to find out what Dr. Whitehouse himself has said about whether he**



**has the science to be able to predict the future of what will happen with respect to the people who have been diagnosed?**

A. I do not know how he has responded to --

MR. HEBERLING: Objection; misstatement of the record.

BY MR. BERNICK:

**Q Are you familiar with the fact that his testimony on this subject was stricken?**

MR. HEBERLING: Objection; outside this case, misrepresentation of the record. In the criminal case you were talking about whether he could predict the progression of disease in the town of Libby. It's an entirely different subject.

MR. BERNICK: I don't know what in the world you're talking about.

MR. HEBERLING: I've got the transcript.

MR. BERNICK: I'm looking at it myself.

BY MR. BERNICK:

**Q Dr. Whitehouse says that he couldn't make predictions of the future based upon science at**



**Libby. Do you disagree with that?**

MR. HEBERLING: Objection; inadequate reading of the context of the statement.

THE WITNESS: You'll have to ask Dr. Whitehouse what he means. And I didn't say I knew what was going to happen. You know, you're --

BY MR. BERNICK:

**Q You said it was "possible"; you're right.**

A. It's possible and if it follows the same pattern, this is what you can expect. It may turn out -- we won't know until either a study is done or until these 1,800 people are dead.

**Q Right. And what kind of study would need to be done to be able to make a scientific prediction? What kind of study?**

A. Some pieces of it would already exist. For example --

**Q Please tell me what kind of study would need to be done?**

MR. HEBERLING: Objection. Let him finish.

BY MR. BERNICK:



**Q What kind of scientific study --**

MR. HEBERLING: He began an answer and you interrupted him. Let him finish.

MR. BERNICK: You know, all you're doing is interfering.

THE WITNESS: A study of the literature that looks at similar issues. Dr. Elms in Northern Ireland took shipyard workers and showed that those with pleural plaques were more likely to develop a malignancy than those without pleural plaques. So, one could look at what percentage of people with pleural plaques and see if it might be applicable to this population.

BY MR. BERNICK:

**Q What if they're not exposed to the same material?**

A. They were exposed to asbestos.

**Q No. I'm talking about Libby amphibole. Dr. Lehman said, in the case of Libby, you have to look at the data relating to Libby because of the nature of the material and the nature of the exposures. Would you agree or disagree with that statement?**

ARTHUR L. FRANK, M.D., PH.D.

A. That would get you closer to what might ultimately occur. But if you're looking for studies that would allow you to make some predictive judgements about what might have occurred to these people, you could look to other situations that are similar.

**Q If you want to have, using your own test, which is a reasonable scientific basis, to have a reasonable scientific basis for scientifically predicting the future of what's going to happen to the 1,800, what kind of study would you need to have at Libby, using your own test?**

A. Any studies that you would do is no longer predictive. It's showing what is occurring at the time.

**Q Right.**

A. And so you could say, perhaps arbitrarily, you have 1,800 and when the first 900 have died, you have a better sense of what the other 900 will die of.

**Q If you have analyzed the people who have died and compared them to the 1,800 as a whole to see whether they are the same or different, you couldn't extrapolate to the 1,800 unless you've**



ARTHUR L. FRANK, M.D., PH.D.

**picked a representative group of people; correct?**

A. Well, by the time you got to 900, you would expect them to be representative and you would look to that. You would see -- first of all, they all have one common characteristic already, which is they've already all been diagnosed with an asbestos-related nonmalignant disease, so they have either asbestosis or pleural plaques or pleural thickening or some manifestation of asbestos disease.

**Q So, you then have to follow that cohort.**

A. So, you know already that those people, without knowing what the exact number would be, are at a greatly increased risk of dying of an asbestos disease and certainly of an asbestos-related malignancy.

**Q Not if they're all pleural plaques.**

A. Sure.

**Q Oh, really?**

A. Yes.

**Q Pleural plaques are predictive --**

A. Predictive of cancer, absolutely. I was just giving you the Elm's study.

**Q Are pleural plaques predictive, alone,**



ARTHUR L. FRANK, M.D., PH.D.

**predictive of either asbestosis or diffuse pleural thickening?**

A. No.

**Q So --**

A. It is predictive of malignancy, though.

**Q So, pleural plaques, you can't on the basis -- we've already studied malignancy at Libby ad nauseam; correct? You have full-blown controlled epidemiological studies that give you the mortality curves for Libby; correct?**

A. Which are enormous.

**Q Which are enormous for people with high dose.**

A. As you would expect.

**Q Right. And we also know that nobody has found on the basis of carcinogenic mortality studies or morbidity --**

A. What is a carcinogenic mortality study?

**Q Nobody has found on the basis of the epidemiological studies for mortality or morbidity for cancer end points, nobody has found that the people of the community of Libby are more likely than others to die of cancer; correct?**

A. That's not correct.



ARTHUR L. FRANK, M.D., PH.D.

MR. HEBERLING: Objection; misstates the record.

THE WITNESS: Dr. Whitehouse's 2008 paper --

BY MR. BERNICK:

**Q That's not a mortality study and it's not an epidemiological study.**

MR. HEBERLING: Objection; misstates the record.

THE WITNESS: But it is a sufficient basis to say that eleven, or whatever the number of cases, in a population of roughly 10,000 in fifteen years gives you a rate of mesothelioma in that community far beyond what you see in any other community in the United States.

BY MR. BERNICK:

**Q If you assume that those eleven people with mesothelioma got it from exposures of Libby?**

A. Yes.

**Q But they didn't; right?**

MR. HEBERLING: Objection; misstates the record.

THE WITNESS: Most of them did.

BY MR. BERNICK:

**Q Well, how do you know? Did Dr. Whitehouse tell you that?**

A. I have seen data that were, I think, three of the eleven had potentially other exposures. Eight had only known community exposure.

**Q Really?**

A. That is my understanding.

**Q Did you actually study that?**

A. I didn't go back and verify that. On the basis of that information, if that is, in fact, correct, and I have no reason to believe that it isn't, then that would be a rate that's much higher than what you would expect to see in a community of that size.

**Q Are you going to testify to that as being the best that science can say?**

A. It is the best information that I have at the moment.

**Q I didn't ask you that.**

A. The best that science can say is studies that haven't been done yet.

**Q Right. And is it also true --**

A. Are you out there doing those studies? Is



anybody else out there doing those studies? Is anybody paying to get the data that you're asking me to present to you?

**Q This is not --**

A. You know, it's fascinating. We don't have data, so you go on the basis of what's best and then what's best in terms of what's available isn't good enough because it's not what the best studies would be.

**Q I'm sorry; I'm not going to respond to that because I don't think it's appropriate that I do. So, I'll ask you a question --**

MR. HEBERLING: Objection; argumentative. Just ask him a question.

BY MR. BERNICK:

**Q Would you agree with me that when it comes to predicting the future of what is going to happen to the 1,800 or to any other group of people at Libby, that the best science that is a reasonable scientific basis for making a prediction of future mortality has not been put in place as of this date?**

A. No, I would not agree with that.

**Q And I want you to tell me now the best**



**scientific evidence that you have, the best scientific studies that you have, that can be used by a reasonable science to actually predict future mortality at Libby. What's the best science?**

A. I would say the experience in the last few years of community only exposures with mesothelioma and the rate being somewhere around eighty per million having been calculated from that tells me that we've got a rate that is eight to eighty times higher than you would expect in any other community pretty much.

**Q And those number comes from the 2008 paper with the eleven mesotheliomas?**

A. Yes.

**Q That's all I got.**

MR. FINCH: I have some follow up based on Mr. Heberling's questions.

- - -

(Exhibit Frank-16 was marked for identification and is attached hereto.)

- - -

EXAMINATION

- - -

BY MR. FINCH:



**Q Dr. Frank, would you agree with me that for any individual who has pleural plaque, it is not more likely than not that that individual will later develop mesothelioma?**

A. I would agree with that.

**Q Would you agree with me that for any individual who has pleural plaque, it is not more likely than not that that person will develop lung cancer?**

A. I agree with that.

**Q So, when you gave the opinion that of the 1,800 people who have been diagnosed with some kind of asbestos-related disease that for each and every one of them it was more likely than not they would die of an asbestos-related disease, what diseases were you talking about?**

A. The combination of nonmalignant and malignant disease accumulatively if the pattern holds with what we have seen so far.

**Q And what you have seen so far, you were referring to the people, the 186 people examined in the CARD mortality study -- the seventy-six?**

A. The seventy-six.

**Q -- in the CARD mortality study?**

Page 258

ARTHUR L. FRANK, M.D., PH.D.

A. Yes.
**Q I have put a document in front of you that we've marked Exhibit Sixteen. The first page of that is the 9,521 people who live in Lincoln County, Montana. I think we agreed --**
A. We discussed this this morning.
**Q We discussed this this morning. That's basically the population of people potentially exposed to asbestos in Libby; right?**
A. Correct.
**Q And the next sheets shows the 1,800 CARD Clinic patients with some kind of asbestos-related disease; correct?**
A. Yes.
**Q The third page -- well, why don't we skip to the fourth page. The 1,800 is broken down into 950 people who are living claimants, and in 850 people who there has not been any medical records produced in this case. Are you aware of that?**
A. I'm aware that not all 1,800 records have been produced. How many were or were not produce, I do not know.
**Q Why don't you go to the last page of the document.**

Page 259

ARTHUR L. FRANK, M.D., PH.D.

A. The last page?
**Q The last page. You personally don't have any data about the 1,800 CARD Clinic patients with asbestos-related disease other than as shown in the seventy-six who are in the mortality study; correct?**
A. Correct.
**Q The 1,800 people in the CARD Clinic with asbestos-related disease, you don't know how many of them had community exposures versus occupational exposures at the Grace mine; correct?**
A. Correct.
**Q You don't know the approximate dose of asbestos that any of them were exposed to; correct?**
A. Correct. And I doubt anybody knows what the dose was that anybody was exposed to.
**Q Well, you don't even know whether it was an --**
A. Occupation or nonoccupational.
**Q Occupational or nonoccupational?**
A. Correct.
**Q You don't know whether any of the 1,800 or how many of the 1,800 are suffering any kind of**

Page 260

ARTHUR L. FRANK, M.D., PH.D.

**lung function decline?**
A. Correct.
**Q You can't predict how many of the 1,800 people will suffer a lung function decline?**
A. Correct.
**Q For any individual person in the 1,800, you can't say it's more likely than not that that person will suffer a lung function decline caused by asbestos that is greater than what you would expect from aging; correct?**
A. Correct.
**Q You can't say it's more likely than not that that will happen; correct?**
A. Correct.
**Q Okay. What I believe you testified to in response to Mr. Heberling's question is that if the pattern of disease you have seen in the seventy-six people that have died of asbestos-related disease as determined by Dr. Whitehouse, if that pattern holds, then you could say that for any given person in the 1,800 patient cohort that it is more likely than not they will die of an asbestos-related disease?**
A. Yes.

Page 261

ARTHUR L. FRANK, M.D., PH.D.

**Q That can only be true if the seventy-six people are representative of the 1,800; correct?**
A. Yes.
**Q The only common criteria, as far as you know, that the seventy-six have with the 1,800 is that they were -- well, there are two. One, that they were exposed to Libby asbestos, and, two, they were diagnosed at some point with an asbestos-related disease; correct?**
A. Yes.
**Q Other than that, you don't know how representative, if at all, the seventy-six are of the 1,800?**
A. Correct.
**Q And so if it turns out that the seventy-six people who died of asbestos-related disease had far higher occupational level of exposures than the type of exposures that the 1,800 patients had, that seventy-six may not be representative at all; correct?**
A. Correct.
**Q And if it turns out that the seventy-six people who died of asbestos-related diseases as determined by Dr. Whitehouse had a greater**

**duration of exposure than the 1,800 patients, you couldn't say that they were representative; correct?**

A. Well, whatever their dose was, or whatever their exposure was, if they are not representative of the 1,800, then I can't say that the pattern will hold.

**Q And you don't know whether when in making his assessment of the seventy-six who died of asbestos-related disease, how many of them were smokers versus nonsmokers; correct?**

A. Correct.

**Q You don't know how many of the 1,800 are smokers versus nonsmokers; correct?**

A. Correct.

**Q If only a small number of the seventy-six were smokers, but the majority of the 1,800 were smokers, would you agree the seventy-six may not be representative of the experience of the 1,800?**

A. They may end up having a higher rate of disease because the synergistic affects of asbestos and smoking.

**Q The 1,800 may?**

A. Yes. If there are more smokers there.





**Q But they may not as well; correct?**

A. If there are fewer smokers they will have a lower rate.

**Q But you don't have any data that tells you, other than the fact that they were exposed to Libby asbestos and Dr. Whitehouse's determined that they had a nonmalignant asbestos disease, as to how representative the seventy-six are of the 1,800?**

A. Correct.

**Q That's all I have.**

MR. HEBERLING: No further questions on this side. Anybody on the phone want to ask a question?

MR. COCKRELL: This is Dale Cockrell. I have just a couple.

- - -

EXAMINATION

- - -

BY MR. COCKRELL:

**Q Dr. Frank, earlier you testified about, and I may have missed this or misunderstood it, but when you were reviewing and preparing the seventy-six sheets on the deceased patients, I**





**think you had said something about you did that in the presence of Dr. Welch and maybe some attorneys?**

A. Yes, sir.

**Q Who was there besides Dr. Welch, yourself and Dr. Whitehouse?**

A. Mr. Heberling was there -- no. An attorney from Boston was it and Mr. Bailor.

**Q Mr. Bailor?**

A. Yes.

**Q When did you do that?**

A. June -- when was it --

MR. FINCH: February.

THE WITNESS: Sometime in February.

MR. BAILOR: I'm not under oath.

THE WITNESS: On a Friday in February.

MR. COCKRELL: That's all I have.

- - -

(Whereupon the Witness was excused at 2:50 p.m.)

- - -





C E R T I F I C A T E

- - -

STATE OF PENNSYLVANIA :

:

COUNTY OF PHILADELPHIA :

- - -

I, Lorraine Murtaugh, Professional Reporter and Notary Public, in and for the Commonwealth of Pennsylvania, do hereby certify that the foregoing testimony of ARTHUR L. FRANK, M.D., PH.D., was taken before me at 1801 Market Street, Philadelphia, Pennsylvania, on Friday, June 5, 2009; that the foregoing testimony was taken by me in shorthand by myself and reduced to typing under my direction and control; that the foregoing pages 1 and 261 contain a true and correct transcription of all of the testimony of said Witness.

.....

LORRAINE MURTAUGH
Notary Public
My Commission expires
August 15, 2012

ACKNOWLEDGMENT OF DEPONENT

I, ARTHUR FRANK,
do hereby certify that I have read the foregoing pages and that the same is a correct transcription of the answers given by me to the questions therein propounded, except for the corrections or changes in form or substance, if any, noted in the attached Errata Sheet.

_____
ARTHUR FRANK
Signed this ____ day of _____,2009.

---
E R R A T A
---

| PAGE | LINE | CHANGE | REASON THEREFOR |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



---
E R R A T A
---

| PAGE | LINE | CHANGE | REASON THEREFOR |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



NOTICE TO READ AND SIGN

A copy of this deposition transcript is being provided to counsel for the witness by JANE ROSE REPORTING for signature.

_____

JANE ROSE REPORTING
80 Fifth Avenue
New York, New York 10011
1-800-825-3341

**E**